BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column : IHC 3,9 Y Test sheet : 7.10.86 Edition replaces : 9.85 : ISO-4113 Calibrating oil : VE 4/11F1150 R140 Injection pump Type number : 0 460 414 009 Customer-specific information Customer Engine : DT 239/856 TEST BENCH REQUIREMENTS Calibrating-oil return temp. °C with thermometer : 40...48 electronically : 42...50 Inlet press., bar: 0.2 Calibrating nozzle-holder : 1 688 901 020 assembly Opening bar: 172...175 pressure Perforated-plate diameter mm : 0.6Test inj. tubing : 1 680 750 017 Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length Start of delivery mm : 0,2+-0,02Prestroke (from BDC): (0,04) Injection-pump setting values Test specifications in parentheses Timing-device travel: 1/min: 800 Speed Charge press. hPa: 800 Setting value mm: 4,5...4,9 Supply-pump pressure: 1/min: 800

Full-load del. with charge press.: 1/min: 800 Speed Charge press. hPa: 800 Del.quantity cm3/ 1000H: 92,2...93,2 Dispersion cm3/: 3,5 1000H: -Full-load del. W/out charge press.: 1/min : 500 Del.quantity cm3/ 1000H.: 75,5...77,5 Low-idle speed regulation: Speed 1/min: 3 Charge press. hPa: -1/min: 350 Del.quantity cm3/ 1000H.: 23.0...27.0 Dispersion cm3/: 3,5 1000H.: -Full-load speed regulation: Speed 1/min: 1270 Charge press. hPa: 800 Del.quantity cm3/ 1000H: 22_0...28_0 Start: 1/min: 100 Speed Charge press. hPa: -Del.quantity mind. cm3/1000H.: 100 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1st speed 1/min: 400 Charge press. hPa: 800 mm: 0,8...1,6 TD travel mm: (0,5...1,9) 1/min: 800 2nd speed Charge press. hPa: 800 TD travel mm: mm: (4,5...4,9) 1/min: 1150 3rd speed hPa: 800 Charge press. mm: 5,3...6,0 TD travel mm: (5,0...6,3)Supply-pump pressure characteristic:

Setting value bar: 5,3...5,9

Charge press. hPa: 800

1st speed 1/min:	400	Zero delivery (stop):
Charge oness bPa:	900	2010 4011101 / 1010p11
Charge press. hPa:	900	
Supply-pump	Į.	Mech. shutoff:
pressure bar:	3 7 2 3	Speed 1/min: -
2nd cood 1/min.	1150	
2nd speed 1/min:		Del.quantity_cm3/: -
Charge press. hPa:	800	1000H.
Supply-pump	f	
cappity pamp	6 / 7 0	Classa skutses.
pressure bar:	ا ۵٫4۰۰۰ ا	Electr. shutoff:
	1	Speed 1/min: 1150
Overflow quantity a	t overflow valve.	ELAB volt: -
over reon quarrerey a	c over from varve.	
	ì	Del.quantity cm3/: - 1000H.
1st speed 1/min:	500 I	1000H.
Charge press. hPa:	CC 470	• 11
Oveflow :		Idle delivery:
quantity cm3/10s:	(49153)	·
2nd speed 1/min:	1150	1st speed 1/min: 350
		ist speed 1/min. 556
Charge press. hPa:	800	Del.quantity cm3/: - 1000H:: (20,529,5)
Overflow:	55138 I	1000H.: (20.529.5)
		2nd speed 1/mine /00
quantity cm3/10s:	(40123)	2nd speed 1/min: 400
		Del.quantity cm3/: 5.011.0 1000H.: (3.512.5)
Delivery-quant. and	hreakaway char · I	1000H · (\$ 5 12 5)
1 data as a day	DI CURUNAY CHAIL.	7- 4 1 1/2 150
1st speed 1/min:		3rd speed 1/min: 450
Charge-air pressure	-settina l	Del.quantity cm3/: -
nnint hPa	300	1000H.: 03,0
point hPa:	300	1000115. 0.2.3,0
LDA stroke mm:	ا کر4	
Dol.quantity cm3/: 1000H.:	86-490-4	Automatic starting fuel delivery:
1000	-	the company of the control of the co
100011.	-	
2nd speed 1/min:	1300	1st speed 1/min: 220
Charge press. hPa:		
Dal supptitue and/		Del.quantity cm3/: - ind. 1000H: 100,0
Deliquantity cm3/:	-	טקטון: חטטון: זחם, ט
1000H.:	02,5	
3rd speed 1/min:	1270	2nd speed 1/min: 300
or a opeca ir iii	000	
Charge press. hPa:	800	
Charge press. hPa:	800	Del.quantity cm3/: -
Charge press. hPa: Del.quantity cm3/:	800	
Charge press. hPa: Del.quantity cm3/: 1000H.:	800 - (21,529,5)	Del.quantity cm3/: - ax. 1000H: 80,0
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min:	800	Del.quantity cm3/: -
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min:	800	Del.quantity cm3/: - ax. 1000H: 80,0
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet:
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in
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Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 5th speed 1/min:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in
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Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0
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Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 1000H.:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 1000H.:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0 xK mm : 20,222,2
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0
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Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0 XK mm : 20,222,2 XL mm : 12,315,7 Remarks:
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0 XK mm : 20,222,2 XL mm : 12,315,7 Remarks:
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0 XK mm : 20,222,2 XL mm : 12,315,7 Remarks:
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0 XK mm : 20,222,2 XL mm : 12,315,7 Remarks:
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 9th speed 1/min:	800	Del.quantity cm3/:- ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0 XK mm : 20,222,2 XL mm : 12,315,7 Remarks:
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Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 9th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H: 9th speed 1/min: Charge press. hPa: Del.quantity cm3/:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0 XK mm : 20,222,2 XL mm : 12,315,7 Remarks:
Charge press. hPa: Del.quantity cm3/: 1000H.: 4th speed 1/min: Charge press. hPa: Del.quantity cm3/: 5th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 6th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 7th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 8th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H.: 9th speed 1/min: Charge press. hPa: Del.quantity cm3/: 1000H: 9th speed 1/min: Charge press. hPa: Del.quantity cm3/:	800	Del.quantity cm3/: - ax. 1000H: 80,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 5,25,4 MS mm : 1,21,4 SVS max. mm : 5,0 XK mm : 20,222,2 XL mm : 12,315,7 Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Note inst. in remarks column Speed 1/min: 300 Del.quantity cm3/ 1000H.: 11,5...15,5 Test sheet : STE 4.0 H : 30.9.86 : 7.84 Edition Full-load speed regulation: replaces : ISO-4113 Calibrating oil Speed 1/min: 1150 Del quantity cm3/ 1000H: 50,0...56,0 : VE 4/11F1100 R94-1 Injection pump : 0 460 414 011 Type number Start: Customer-specific information Customer : STEYER Speed 1/min: 100 Del.quantity mind. : WD 411.89/90 Engine cm3/1000H.: 70,0 TEST BENCH REQUIREMENTS Inspection-pump test specifications Test specifications in parentheses Calibrating-oil oc return temp. with thermometer : 40...48 Timing-device characteristic: : 42...50 electronically 1/min: 500 1st speed TD travel Inlet press., bar: 0.2 mm: 0,8...1,6 mm: (0,5...1,9)1/min: 1100 mm: 5,9...6,7 mm: (5,6...7,0) Calibrating nozzle-holder 2nd speed : 1 688 901 000 assembly TD travel Opening Supply-pump pressure characteristic: bar: 147...150 pressure 1/min: 500 1st speed Test inj. tubing : 1 680 750 017 Supply-pump bar: 2,8...3,4 pressure 1/min: 1100 Outside diameter 2nd speed x Wall thickness : 2 Supply-pump bar: 5,7...6,3 mm: 840 pressure x Length Injection-pump setting values Overflow quantity at overflow valve: Test specifications in parentheses 1/min: 1100 1st speed : 55...138 Oveflow Timing-device travel: quantity cm3/10s: (40...153) Speed 1/min: 1000 Setting value mm: 5,2., 5,6 Delivery-quant. and breakaway char.: 1/min: 1270 1st speed Del.quantity cm3/: -1000H.: 0...2,0 Supply-pump pressure: 2nd speed 1/min: 1200 Speed 1/min: 1000 Del.quantity cm3/: 14.0...22.0 1000H.: (13.5...22.5) 3rd speed 1/min: 1150 Setting value bar: 5,2...5,8 Full-load del. w/out charge press.: Del.quantity cm3/: -1000H.: (48,5...57,5) 1/min : 1000 Speed 1/min: 1080 Del.quantity cm3/ 4th speed 1000H.: 73,5...74,5 Del.quantity cm3/: 72,5...74,5 1000H.: (70,8...76,2) 5th speed 1/min: 1000 cm3/: 3.0Dispersion 1000H.: -5th speed

A03

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Del.quantity cm3/: -
1000H.: (71,3...76,7)
6th speed
              1/min: 500°
Del.quantity cm3/: 66,0...70,0
1000H.: (64,6...71,4)
Zéro delivery (stop):
              1000H.
Idle delivery:
1st speed
               1/min: 300
Del.quantity cm3/: -
1000H.: (9,0...18,0)
               1/min: 340
2nd speed
Del.quantity cm3/: -
1000H.: 0...1,5
3rd speed
              1/min: 400
Del.quantity cm3/: -
1000H.: 0...1,0
Automatic starting fuel delivery:
               1/min: 170
1st speed
Del.quantity cm3/: -
               1000H: 70,0
 ind.
2nd speed
               1/min: 250
Del.quantity cm3/: -
               1000H: 65,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
Rated voltage
Mounting and assembly dimensions:
Designation
                    : 3, 2-3, 4
: 5, 2-5, 5
: 0, 9-1, 1
K
                mm
KF
                mm
MS
                mm
SVS max.
                     : 4,0
                mm
Remarks:
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BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column : IHC 3,9 Y6 Test sheet Edition : 12.12.86 replaces Calibrating oil : ISO 4113 Injection pump : VE 4/11F1090 R176 : 0 460 414 016 Type number Customer-specific information Customer : D239-E833 Engine TEST BENCH REQUIREMENTS Calibrating-oil return temp. with thermometer: 40...48 : 42...50 electronically Inlet press., bar: 0.2 Calibrating nozzle-holder : 1 688 901 020 assembly Opening bar: 172...175 pressure Perforated-plate diameter mm:0.6Test inj. tubing : 1 680 750 017 Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length Start of delivery Prestroke mm: 0,2(from BDC): +-0.02(0.04)Injection-pump setting values Test specifications in parentheses Timing-device travel: 1/min: 800 Speed Setting value mm: 4,8...5,2 Supply-pump pressure: 1/min: 800 Speed Setting value bar: 5,1...5,7

Full-load del. w/out charge press.: Speed 1/min : 800 Del.quantity cm3/ 1000H.: 81.5...82.5 cm3/: 3.5 Dispersion 1000H.: (4,0) Low-idle speed regulation: 1/min: 350 Speed Del.quantity cm3/ 1000H.: 21.5...25,5 Dispersion cm3/: 3,5 1000H.: (4,0) Full-load speed regulation: 1/min: 1200 Speed Del.quantity cm3/ 1000H: 12,0...18,0 Start: 1/min: 100 Speed Del.quantity mind. cm3/1000H.: 100 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1/min: 400 1st speed TD travel mm: 1,7...2,5 mm: (1,4...2,8) 1/min: 800 2nd speed TD travel mm: mm: (4,3...5,7) 1/min: 1050 3rd speed mm: 5,4...6,2 mm: (5,1...6,5) TD travel Supply-pump pressure characteristic: 1/min: 400 1st speed Supply-pump bar: 3,5...4,1 pressure 1/min: 1050 2nd speed Supply-pump pressure bar: 6,0...6,6 Overflow quantity at overflow valve: 1/min: 500 1st speed : 55...138 Oveflow cm3/10s: (40...153) quantity 1/min: 1090 2nd speed Overflow : 55...138 quantity cm3/10s: (40...153)

```
Delivery-quant. and breakaway char.:
1st speed
               1/min: 1270
Del.quantity cm3/: -
1000H.: 0...2,0
3rd speed
               1/min: 1200
Del.quantity cm3/: -
1000H.: (10,5...19,5)
4th speed
               1/min: 1150
              cm3/: 47,0...53,0
1000H.: (45,5...54,5)
Del.quantity
                      1050
5th speed
               1/min:
Del.quantity cm3/: 78,5...81,5
1000H.: (77,4...82,6)
               1/min: 800
6th speed
Del.quantity cm3/: -
1000H.: (79,4...84,6)
               1/min: 650
7th speed
Del.quantity cm3/: 75,0...79,0
1000H.: (73,6...80,4)
               1/min: 500
8th speed
Del.quantity cm3/: 65,5...69,5
               1000H: (64,1...70,9)
Zero delivery (stop):
              1000H.
Idle delivery:
               1/min: 350
1st speed
Del.quantity cm3/: -
              1000H.: (19,0..28,0)
2nd speed
               1/min: 400
Del.quantity cm3/: 4,5...10,5
1000H.: (3,0...12,0)
               1/min: 460
3rd speed
Del.quantity cms/: 1000H.: 0...2,0
Automatic starting fuel delivery:
               1/min: 220
1st speed
Del.quantity cm3/: -
 ind.
               1000H: 100,0
2nd speed
               1/min: 300
Del.quantity cm3/: -
               1000H: 70,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
Rated voltage
Mounting and assembly dimensions:
Designation
                mm
KF
                    4,5...1,5
                mm
```

A06

MS mm : 1,0..1,25 SVS max. mm : 3,2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3.1 C Edition : 3.12.86 replaces : 4.86 Calibrating oil : ISO 4113

Injection pump : VE 4/11F1900 L217 Type number : 0 460 414 027

Customer-specific information Customer : VOLVO PENTA

Engine : TAMD 31

Power k: 95

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 × Wall thickness : 2 × Length mm : 450

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value bar: 6,1...6,7

```
Supply-pump
                                                                            bar: 2,7...3,3
1/min: 1900
Full-load del. with charge press.:
                                                             pressure
                                                            2nd speed
                1/min: 1500
Speed
                                                            Charge press.
                                                                              hPa: 1000
Charge press. hPa: 1000
                                                            Supply-pump
Del.quantity
                                                                              bar: 7,5...8,1
                cm3/
                                                             pressure
               1000H.: 93,5...94,5
                cm3/:5,0
                                                            Overflow quantity at overflow valve:
Dispersion
               1000H : -
                                                            1st speed
                                                                            1/min: 700
Full-load del. w/out charge press.:
                                                            Charge press. hPa: -
                                                                                  : 46...83
                                                            Oveflow
               1/min : 650
                                                             quantity cm3/10s: (21...98)
Speed
Del.quantity cm3/
                                                                        1/min: 1900
                                                            2nd speed
               1000H.: 58,5...59,5
                                                            Charge press. hPa: 1000
                                                            Overflow
                                                                                  : 55...138
Low-idle speed regulation:
                                                             quantity cm3/10s: (40...153)
Speed
                1/min: 350
                                                            Delivery-quant. and breakaway char.:
Charge press. hPa: -
                                                                           1/min: 800
                                                            1st speed
Del.quantity cm3/
1000H.: 23.0...27.0
Dispersion cm3/: 3.5
                                                            Charge-air pressure-setting
                                                                              hPa: 300
                                                             point
                                                            LDA stroke mm: 6,4
Del.quantity cm3/: 83,5...84,5
1009H.: (81,3...86,7)
               1000H.: -
Full-load speed regulation:
                                                                            1/min: 2230
                                                            2nd speed
                                                            Charge press. hPa: 1000
Speed
                1/min: 2100
                                                            Del.quantity cm3/: -
1000H.: 0...3,0
Charge press. hPa: 1000
Deliquantity cm3/
                                                                            1/min: 2100
                1000H: 31,0...37,0
                                                            3rd speed
                                                            Charge press. hPa: 1000
                                                            Del.quantity cm3/: -
1000H.: (29,5...38,5)
Start:
                                                                            1/min: 2050
Speed
                1/min: 100
                                                            4th speed
                                                            Charge press. hPa: 1000
Del.quantity cm3/: 67.0...77.0
1000H.: (67.5...76.5)
Del.quantity mind.
          cm3/1000H.: 100
                                                            5th speed 1/min: 1900
Charge press. hPa: 1000
Del.quantity cm3/: 83,0...86,0
1000H.: (81,8...87,2)
Inspection-pump test specifications
Test specifications in parentheses
                                                                            1/min: 1500
Timing-device characteristic:
                                                            6th speed
                                                            Charge press. hPa: 1000
                                                            Del.quantity cm3/: -
1000H.: (91,3...96,7)
7th speed 1/min: 1200
Charge press. hPa: 1000
Del.quantity cm3/: 97,2...99,8
1000H.: (95,8...101,2)
8th speed 1/min: 700
Charge press. hPa: 1000
                1/min: 1100
1st speed
Charge press. hPa: 1000
                   mm: 0,9...1,7
TD travel
                   mm: (0,6...2,0)
                1/min: 1500
2nd speed
Charge press. hPa: 1000
TD travel
                   mm: -
                   mm: (3,8...5,2)
                                                            Charge press. hPa: 1000
                                                            Del.quantity cm3/: 96,5...99,5
1000H: (94,6...101,4)
                1/min: 1900
3rd speed
Charge press. hPa: 1000
                   mm: 6,1...6,9
mm: (5,8...7,2)
                                                                            1/min: 650
TD travel
                                                            9th speed
                                                            Charge press. hPa:
                                                            Del.quantity cm3/:
                                                                            1000H: (56,3...61,7)
Supply-pump pressure characteristic:
1st speed
               1/min: 500
                                                            Zero delivery (stop):
Charge press. hPa: 1000
```

80A

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Mech. shutoff:
               1/min: -
Speed
Del.quantity cm3/: - 1000H.
Electr. shutoff:
               1/min: 1090
volt: 12,0
Speed
ELAB
Del.quantity cm3/: -
Idle delivery:
1st speed
               1/min: 350
Del.quantity cm3/: 1000H.:
                       (20,5..29,5)
2nd speed
               1/min: 400
Del.quantity cm3/: 7.0...13.0
1000H.: (5.5...14.5)
3rd speed 1/mir: 480
3rd speed
Del.quantity cm3/: -
1000H.: 0...3,0
Automatic starting fuel delivery:
1st speed
               1/min: 400
Del.quantity cm3/: -
 ind.
               1000H: 74,0
               1/min: 500
2nd speed
Deliquantity cm3/: -
               1000H: 72,0
Shutoff electromagnet:
Cut-in
min. voltage
                     : 10,0
                     : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
                mm
KF
                     : 5,2...5,5
                mm
                    4 رُ 1 . . . 2 رُ 1 :
MS
                mm
SVS max.
                    : 3,8
                mm
                    : 18,8...20,8
: 14,3...17,7
ΧK
                mm
XL
                mm
Remarks:
Pushing electromagnet.
Correction at adjusting nut (46)
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BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VOL 3,1 A1 : 4.12.86 Edition replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/11F1625 L217-2

: 0 460 414 031 Type number

Customer-specific information : VOLVO PENTA Customer

: TAM 31 Engine

Power k: 31

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Start of delivery

Prestroke mm: 0.3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device trave:

Speed 1/min: 1500 Setting value mm: 4,3...4,7

Supply-pump pressure:

1/min: 1500 Setting value bar: 6,1...6,7

Full-load del. w/out charge press.:

1 (non-1 1 (non-1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Delivery-quant. and breakaway char.:
Speed 1/min: 1500	1st speed 1/min: 1970
Del.quantity cm3/ 1000H.: 83,584,5	Del.quantity cm3/: - 1000H.: 03,0
Dispersion cm3/: 5,0	3rd speed 1/min: 1880
1000H.: -	Del.quantity cm3/: 3,011,0
	1000H.: (2,511,5)
Low-idle speed regulation:	4th speed 1/min: 1800
	Del.quantity cm3/: -
Speed 1/min: 350	1000H.: (29,538,5)
Del.quantity cm3/	5th speed 1/min: 1750
1000H.: 18,022,0	Del.quantity_cm3/: 53,061,0
Dispersion cm3/: 3,5 1	1000H.: (52,561,5)
Full-load speed regulation:	6th speed 1/min: 1625
Tract toda speed regulation.	Del.quantity cm3/: 78,581,5 1000H.: (77,382,7)
Speed 1/min: 1800	7th speed 1/min: 1500
Del.quantity cm3/	Del.quantity cm3/: -
1000H: 31,037,0	1000H.: (81,386,7)
	8th speed 1/min: 1000
Start:	Del.quantity cm3/: 91,794,3
10	1000H: (90,395,7)
Speed 1/min: 100	9th speed 1/min: 800
Del.quantity mind.	Del.quantity cm3/: 90,093,0
cm3/1000H.: 95,0	1000H: (88,194,9)
Inspection-pump test specifications	Zero delivery (stop):
Test specifications in parentheses	zero de tivery to copy.
1	Mech. shutoff:
1	Speed 1/min: -
Timing-device characteristic:	Del.quantity cm3/: -
	1000H.
1st speed 1/min: 1100	.
TD travel mm: 0.91.7	Electr. shutoff:
mm: (0,62,0) 2nd speed 1/min: 1500	Speed 1/min: 1625 ELAB volt: 12,0
2nd speed	ELAB volt: 12,0 Del.quantity cm3/: -
mm: (3,85,2)	1000H.
3rd speed 1/min: 1625	1000113
TD travel mm: 5,05,8	Idle delivery:
mm: $(4,76,1)$	
į.	1st speed 1/min: 350
Supply-pump pressure characteristic:	Del.quantity cm3/: -
44 : 500	1000H.: (15,524,5)
1st speed 1/min: 500	2nd speed 1/min: 400
Supply-pump 1	Del.quantity cm3/: 4,010,0
pressure bar: 2,73,3 2nd speed 1/min: 1625	1000H.: (2,511,5) 3rd speed 1/min: 450
Supply-pump	3rd speed
pressure bar: 6,67,2	1000H.: 03,0
Overflow quantity at overflow valve:	2nd speed 1/min: 600
	Del.quantity cm3/: -
1st speed 1/min: 700	ax. 1000H: 90,0
Oveflow : 4683	Churche alachananach
quantity cm3/10s: (2198)	Shutoff electromagnet:
2nd speed	Cut-in
quantity cm3/10s: (40153)	Cut-in min. voltage : 10,0
Hamiltonia marina (40111199)	Rated voltage : 12,0
<u>'</u>	
1.011	

Mounting and assembly dimensions:

Remarks: Pushing electromagnet.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Full-load del. with charge press.: Note inst. in remarks column Speed 1/min: 1500 Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 72,0...73,0 Dispersion cm3/: 5,0 1000H: -Test sheet : VOL 3,1 A : 4.12.86 Edition : 4.86 replaces : ISO 4113 Calibrating oil : VE 4/11F1900 L217-3 Injection pump Full-load del. w/out charge press.: Type number : 0 460 414 032 1/min : 650 Speed Customer-specific information Del.quantity cm3/ Customer : VOLVO PENTA 1000H.: 54,0...55,0 Low-idle speed regulation: : TMD 31 Engine k: 74 Power Speed 1/min: 350 Charge press. hPa: -Del.quantity cm3/ 1000H.: 18,0...22,0 TEST BENCH REQUIREMENTS Calibrating-oil C Full-load speed regulation: return temp. with thermometer: 40...48 1/min: 2150 Speed : 42...50 Charge press. hPa: 1000 electronically Deliquantity cm3/ 1000H: 12,0...18,0 Inlet press., bar: 0.2 Calibrating nozzle-holder Start: : 1 688 901 022 assembly Speed 1/min: 100 Del.quantity mind. Opening bar : 130...133 cm3/1000H.: 90.0 pressure Inspection-pump test specifications Test inj. tubing : 1 688 750 073 Test specifications in parentheses Outside diameter x Wall thickness : 2 Timing-device characteristic: mm: 450 x Length 1st speed 1/min: 1000 Charge press. hPa: 1000 TD travel mm: 1,5...2,3 Start of delivery mm : 0,3 Prestroke (from BDC): +-0.02(0.04)mm: (1,2,...2,6)1/min: 1500 2nd speed Charge press. hPa: 1000 Injection-pump setting values Test specifications in parentheses TD travel mm: mm: (4,8...6,2) 1/min: 1900 hPa: 1000 3rd speed Timing-device travel: Charge press. mm: 6,3...7,1 mm: (6,0...7,4) 1/min: 1500 TD travel Speed Charge press. hPa: 1000 Setting value mm: 5,3...5,7 Supply-pump pressure characteristic: Supply-pump pressure: 1/min: 500 1st speed hPa: 1000 1/min: 1500 Speed Charge press. Charge press. hPa: 1000 Supply-pump Setting value bar: 6,4...7,0 bar: 2,9...3,5 pressure A13

2nd speed 1/min: 1900 volt: 12,0 Supply-pump Del.quantity cm3/: bar: 7,7...8,3 1000H. pressure Overflow quantity at overflow valve: Idle delivery: 1/min: 700 1st speed 1/min: 350 1st speed Charge press. hPa: -Del.quantity cm3/: : 41...83 1000H.: (15,5..24,5) Oveflow 2nd speed 1/min: 400 Del.quantity cm3/: 4,5...10,5 1000H.: (3,0...12,0) Charge press. hPa: 1000 Overflow : 55... 55...138 3rd speed 1/min: 450 quantity cm3/10s: (40...153) cm3/: Del.quantity 1000H.: 0...3,0 Delivery-quant. and breakaway char.: Automatic starting fuel delivery: 1st speed 1/min: 800 Charge-air pressure-setting hPa: 300 point 1/min: 400 1st speed LDA stroke mm: 6,3
Del.quantity cm3/: 67,5...68,5
1000H.: (65,4...70,6)
2nd speed 1/min: 2220 cm3/: Del.quantity 1000H: 70,0 ind. 1/min: 500 2nd speed Charge press. hPa: 1000 Del.quantity cm3/: -Del.quantity cm3/: -1000H.: 0...3,0 1000H: 65,0 1/min: 2150 3rd speed Shutoff electromagnet: Charge press. hPa: 1000 Del.quantity cm3/: -1000H.: (10,5...19,5) 4th speed 1/min: 2100 Cut-in : 10,0 min. voltage Rated voltage : 12,0 Charge press. hPa: 1000 Del.quantity cm3/: 50,5...60,5 1000H:: (51,0...60,0) Mounting and assembly dimensions: 1/min: 1900 5th speed Designation Charge press. hPa: 1000 Del.quantity cm3/: 67.5...70.5 1000H.: (66.4...71.6) mm KF : 5,2...5,5 mm MS mm **4ر1...2ر1** : 1/min: 1500 SVS max. : 3,8 6th speed mm Charge press. hPa: 1000 Del.quantity cm3/: -1000H.: (69,9...75,1) Remarks: Pushing electromagnet. 1/min: 800 7th speed Charge press. hPa: 1000 Del.quantity cm3/: 73.0...76.0 1000H.: (71.1...77.9) 1/min: 650 8th speed Correction at adjusting nut (46) Charge press. hPa: -Del.quantity cm3/: 1000H: (51,9...57,1) Zero delivery (stop): Mech. shutoff: 1/min: -Speed Del.quantity cm3/: ~ 1000H. Electr. shutoff: 1/min: 1900 Speed A14

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column : VOL 3,0 P1 Test sheet Edition : 2.12.86 replaces Calibrating oil : ISO 4113 Injection pump : VE 4/11F1625 L111-3 : 0 460 414 033 Type number Customer-specific information Customer : VOLVO-PENTA Engine : TAMD 30 A TEST BENCH REQUIREMENTS Calibrating-oil OC return temp. with thermometer : 40...48 : 42...50 electronically Inlet press., bar: 0.2 Calibrating nozzle-holder : 1 688 901 000 assembly Opening bar : 147...150 pressure Test inj. tubing : 1 680 750 017 Outside diameter : 6 x Wall thickness mm: 840 x Length Start of delivery Prestroke mm : 0,2 (from BDC): +-0.02(0.04)Injection-pump setting values Test specifications in parentheses Timing-device travel: 1/min: 1500 Setting value mm: 2,6...3,0 Supply-pump pressure: 1/min: 1500 Speed Setting value bar: 6,2...6,8 Full-load del. w/out charge press.: Speed 1/min : 1500 A15

Del.quantity cm3/ 1000H.: 62,0...63,0 cm3/: 3,5 Dispersion 1000H.: -Low-idle speed regulation: 1/min: 325 Del.quantity cm3/ 1000H.: 26,0...30,0 cm3/: 3,5 Dispersion 1000H.: -Full-load speed regulation: 1/min: 2000 Speed Del.quantity cm3/ 1000H: 6,0...14,0 Start: Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 70.0 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1/min: 1000 1st speed mm: 0.5...1.3 mm: (0,2...1,6) TD travel 1/min: 1500 2nd speed TD travel mm: mm: (2,1...3,5) 1/min: 1625 mm: 3,0...3,6 3rd speed TD travel mm: (2,6...4,0)Supply-pump pressure characteristic: 1/min: 600 1st speed Supply-pump bar: 3,2...3,8 pressure 1/min: 1625 2nd speed Supply-pump pressure bar: 6,6...7₂ Overflow quantity at overflow valve: 1/min: 600 1st speed Preflow: 55...138
quantity cm3/10s: (40...153)
Prof. speed: 1/min: 1625 Oveflow | 2nd speed Over flow : 55...138 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2100

```
Del.quantity cm3/: -
               1000H.: 0...2,0
2nd speed
                1/min: 2000
Del.quantity cm3/: -
               1000H.: (5,5...14,5)
1/min: 1800
3rd speed
Del.quantity cm3/: 46.5...52.5

1000H.: (45.0...54.0)

4th speed 1/min: 1625

Del.quantity cm3/: 58.5...61.5

1000H.: (57.3...62.7)
                1/min: 1500
5th speed
Del.quantity cm3/: -
1000H.: (59,8...65,2)
                1/min: 1000
6th speed
Del.quantity cm3/: 61.5...63.5
1000H.: (59.8...65.2)
7th speed
                1/min: 600
Del.quantity cm3/: 52,5...56,5
1000H.: (51,1...57,9)
Zero delivery (stop):
               1000H.
Idle delivery:
1st speed
                1/min: 325
Del.quantity cm3/:
               1000H.: (23,5..32,5)
                1/min: 450
2nd speed
Del.quantity cm3/: -
1000H.: 0...3,0
                1/min: 500
3rd speed
Del.quantity cm3/: -
1000H.: 0...1,0
Automatic starting fuel delivery:
                1/min: 350
1st speed
Del.quantity cm3/: -
 ind.
                1000H: 70,0
                1/min: 450
2nd speed
Del.quantity cm3/: -
                1000H: 65,0
Shutoff electromagnet:
Cut-in
 min. voltage
                      : 20,0
Rated voltage
                      : 24,0
Mounting and assembly dimensions:
Designation
K
                 mm
KF
                     : 5,7...6,0
                 mm
MS
                     : 1,2..1,45
                 mm
SVS max.
                      : 5,0
                 mm
```

Remarks: Pushing electromagnet.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Speed Note inst. in remarks column : VOL 3_1 A2 Test sheet Edition : 4.12.86 replaces Calibrating oil : ISO 4113 Injection pump : VE 4/11F1625 L217-4 Type number : 0 460 414 034 Customer-specific information Customer : VOLVO PENTA : TAM 31 Engine Speed Power k: 81 TEST BENCH REQUIREMENTS Start: Calibrating-oil C Speed return temp. with thermometer : 40...48 electronically : 42...50 Inlet press., bar: 0.2 Calibrating nozzle-holder assembly : 1 688 901 022 Opening pressure bar : 130...133 Test inj. tubing : 1 680 750 073 Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length Start of delivery mm : 0,3 Prestroke (from BDC): +-0.02(0.04)Injection-pump setting values Test specifications in parentheses Timing-device travel: 1/min: 1500 Setting value mm: 4,3...4,7 Supply-pump pressure: Speed 1/min: 1500 Setting value bar: 6,1...6,7 Full-load del. w/out charge press.:

A17

1/min : 1500 Deliquantity cm3/ 1000H.: 83,5...84,5 cm3/: 5,0 Dispersion 1000H.: -Low-idle speed regulation: 1/min: 350 Del.quantity cm3/ 1000H.: 18,0...22,0 cm3/: 3,5 Dispersion 1000H.: -Full-load speed regulation: 1/min: 1800 Del.quantity cm3/ 1000H: 31,0...37,0 1/min: 100 Del.quantity mind. cm3/1000H.: 95.0 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1st speed 1/min: 1100 TD travel mm: 0,9...1,7 mm: (0,6...2,0)1/min: 1500 2nd speed TD travel mm: mm: (3,8...5,2) 1/min: 1625 3rd speed TD travel mm: 5,0...5,8 mm: (4,7...6,1)Supply-pump pressure characteristic: 1st speed 1/min: 500 Supply-pump bar: 2,7...3,3 pressure 1/min: 1625 2nd speed Supply-pump bar: 6,6...7,2 pressure Overflow quantity at overflow valve: 1st speed 1/min: 700 : 41...83 Oveflow : 55.,.138 Over flow quantity cm3/10s: (40...153)

```
Delivery-quant. and breakaway char.:
1st speed
              1/min: 1970
Del.quantity cm3/: -
              1000H.: 0...3,0
2nd speed
               1/min: 1880
              cm3/: 3.0...10.0
1000H.: (2.5...11.5)
Del.quantity
               1/min: 1800
3rd speed
Del.quantity cm3/: -
1000H.: (29,5...38,5)
               1/min: 1750
4th speed
Del.quantity cm3/: 53.0...61.0
1000H: (52.5...61.5)
               1/min: 1625
5th speed
Del.quantity cm3/: 78,5...81,5
1000H.: (77,3...82,7)
6th speed
               1/min: 1500
Del.quantity cm3/: -
1000H.: (81,3...86,7)
7th speed
               1/min: 1000
Del.quantity cm3/: 91,7...94,3
              1000H.: (90,3...95,7)
               1/min: 800
8th speed
Del.quantity cm3/: 90,0...93,0
               1000H: (88,1...94,9)
Zero delivery (stop): 1000H.
Idle delivery:
               1/min: 350
1st speed
Del.quantity cm3/:
              1000H.:
                       (15, 5, .19, 5)
               1/min: 400
2nd speed
Del.quantity cm3/: 4,0....11,5)
               1/min: 450
3rd speed
Del.quantity cm3/: -
1000H.: 0...3,0
2nd speed
               1/min: 600
Del.quantity cm3/: -
               1000H: 90-0
Shutoff electromagnet:
Cut-in
                     : 20,0
 min. voltage
Rated voltage
                     : 24,0
Mounting and assembly dimensions:
Designation
                mm
KF
                     : K-2T
                mm
                    : 1,2..1,45
: 18,8...20,8
MS
                mm
XK
                mm
XL
                mm
                     5ر،14 : . . . 1 : 1
```

Remarks: Pushing electromagnet.

Full-load del. with charge press.: BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Speed 1/min: 1100 Charge press. hPa: 800 Del.quantity cm3/ 1000H.: 60,5...61,5 : VOL 3,1 E Test sheet Edition : 3.12.86 cm3/: 3,5 1000H:replaces Dispersion Calibrating oil : ISO 4113 Injection pump : VE 4/11F1300 L251 Full-load del. w/out charge press.: Type number : 0 460 414 037 1/min : 600 Speed Customer-specific information Del.quantity cm3/ Customer : VOLVO-PENTA 1000H.: 47,0...48,0 Engine : TD 31 Low-idle speed regulation: Power k: 49 Speed 1/min: 350 Charge press. hPa: -Del.quantity cm3/ TEST BENCH REQUIREMENTS 1000H.: 18,0...22,0 Calibrating-oil cm3/: 3,5 Dispersion 1000H.: return temp. with thermometer : 40...48 Full-load speed regulation: electronically : 42...50 Speed 1/min: 1350 Inlet press., bar : 0.2 Charge press. hPa: 800 Del.quantity cm3/ Calibrating nozzle-holder 1000H: 28,0...34,0 : 1 688 901 022 assembly Start: Opening bar : 130...133 pressure Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 70.0 Test inj. tubing : 1 6800 750 073 Inspection-pump test specifications Outside diameter Test specifications in parentheses x Wall thickness : 2 mm: 450 x Length Timing-device characteristic: Start of delivery Prestroke mm: 0,21/min: 900 1st speed Charge press. hPa: 800 (from BDC): +-0.02(0.04)TD travel mm: 0,2...1,0 Injection-pump setting values mm: (0...1,3)1/min: 1100 Test specifications in parentheses 2nd speed Charge press. hPa: 800 Timing-device travel: TD travel mm: mm: (0,9...2,3) 1/min: 1300 Speed 1/min: 1100 3rd speed Charge press. hPa: 800 Charge press. hPa: 800 mm: 2,3...3,1 mm: (2,0...3,4) Setting value mm: 1,4...1,8 TD travel Supply-pump pressure: Supply-pump pressure characteristic: 1/min: 1100 Speed Charge press. hPa: 800 Setting value bar: 4,8...5,4 1st speed 1/min: 500 Charge press. hPa: 800 A19

Supply-pump Idle delivery: bar: 2,4...3,0 1/min: 1300 pressure 2nd speed 1/min: 350 1st speed Del.quantity cm3/: -1000H.: (15,5..24,5) Charge press. hPa: 800 Supply-pump 2nd speed 1/min: 380
Del.quantity cm3/: 5.0...11.0
1000H.: (3.5...12.5) bar: 5,6...6,2 pressure Overflow quantity at overflow valve: 1/min: 420 3rd speed Del.quantity cms/: -1000H.: 0...3,0 1/min: 600 1st speed Charge press. hPa: 800 Oveflow : 41...83 quantity cm3/10s: (26...98) 2nd speed 1/min: 1300 Automatic starting fuel delivery: Charge press. hPa: 800 Overflow : 55.. 1st speed 1/min: 250 : 55...138 Deliquantity cm3/: quantity cm3/10s: (40...153) 1000H: 70,0 ind. 1/min: 450 Delivery-quant. and breakaway char.: 2nd speed 1st speed 1/min: 600 Del.quantity cm3/: -Charge-air pressure-setting 1000H: 52,0 point hPa: 400 Del.quantity cm3/: 47,0...48,0 1000H.: (44,8...50,2) 2nd speed 1/min: 1450 Charge press. hPa: 800 Shutoff electromagnet: Cut-in min. voltage Del.quantity cm3/: -1000H.: 0...2,5 Rated voltage 1/min: 1400 3rd speed Mounting and assembly dimensions: Charge press. hPa: 800 Del.quantity cm3/: 9,0...16,0 1000H.: (8,0...17,0) 4th speed 1/min: 1350 Charge press. hPa: 800 Designation mm : 5,7...6,0 : 1,2..1,45 **KF** mm MS mm Del.quantity cm3/: -1000H.: (26,5...35,5) SVS max. mm 1/min: 1250 5th speed Remarks: Charge press. hPa: 800 Correction at adjusting nut (46) Del.quantity cm3/: 60,5...63,5 1000H.: (59,3...64,7) 6th speed 1/min: 1100 Charge press. hPa: 800 Del.quantity cm3/: -1000H.: (58,3...63,7) Pushing electromagnet. 7th speed 1/min: 600 Charge press. hPa: 800 Del.quantity cm3/: 50,0...53,0 1000H.: (48,1...54,9) 1/min: 600 8th speed Charge press. hPa: -Del.quantity cm3/: -1000H: (38,3...43,7) Zero delivery (stop): Mech. shutoff: Speed 1/min: 1300 Del.quantity cm3/: - 1000H.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column : FIA 3,6 K Test sheet Edition : 18.12.86 replaces Calibrating oil : ISO 4113 : VE 4/11F1350 R257 Injection pump : 0 460 414 039 Type number Customer-specific information Customer : FIAT-IVECO Engine : 8040.25.200 TEST BENCH REQUIREMENTS Calibrating-oil oc return temp. with thermometer: 40...48 : 42...50 electronically Inlet press., bar : 0.2 Calibrating nozzle-holder : 1 688 901 020 assembly Opening bar: 172...175 pressure Perforated-plate diameter mm:0.6Test inj. tubing : 1 680 750 017 Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length Start of delivery mm: 0,4Prestroke (from BDC): +-0.02(0.04)Injection-pump setting values Test specifications in parentheses Timing-device travel: 1/min: 1000 Speed Charge press. hPa: 1000 Setting value mm: 3,8...4,2 Supply-pump pressure: 1/min: 1000 Charge press. hPa: 1000

Setting value bar: 5,7...6,3 Full-load del. with charge press.: Speed 1/min: 1000 Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 93.5...94.5 Dispersion cm3/: 3.5 1000H : (4,0) Full-load del. w/out charge press.: 1/min : 500 Speed Del.quantity cm3/ 1000H.: 68,5...69,5 Low-idle speed regulation: 1/min: 400 Speed Charge press. hPa: -Del.quantity cm3/ 1000H.: 19.0...23.0 Dispersion cm3/: 3.5 1000H.: (4.0) Full-load speed regulation: 1/min: 1350 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H: 85,0...88,0 Start: 1/min: 100 Speed Del.quantity mind. cm3/1000H.: 90.0 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1/min: 800 1st speed Charge press. hPa: 1000 mm: 1,7...2,5 TD travel mm: (1,4...2,8)1/min: 1000 2nd speed Charge press. hPa: 1000 TD travel mm: mm: (3,3...3,7) 1/min: 1350 3rd speed Charge press. hPa: 1000 mm: 6,3...7,1 mm: (6,0...7,4) TD travel Supply-pump pressure characteristic: 1/min: 500 1st speed

Charge press. hPa: 1000 Mech. shutoff: Supply-pump 1/min: 1350 Speed bar: 3,6...4,2 pressure Del.quantity cm3/: -2nd speed 1/min: 800 1000H. Charge press. hPa: 1000 Supp Ty-pump Idle delivery: bar: 4,8...5,4 1/min: 1350 pressure 3rd speed 1st speed 1/min: 400 Del.quantity cm3/: -1000H.: (16,5..25,5) hPa: 1000 Charge press. Supp (y-pump 2nd speed 1/min: 430 Del.quantity cm3/: 2,5...9,5 1000H.: (1,5...10,5) pressure bar: 7,0...7,6 Overflow quantity at overflow valve: 1/min: 480 3rd speed 1st speed 1/min: 500 Del.quantity cm3/: -1000H.: 0...2,5 Charge press. hPa: -Oveflow : 41...83 quantity cm3/10s: (26...98) Automatic starting fuel delivery: 2nd speed 1/min: 1350 Charge press. hPa: 1000 1st speed 1/min: 150 Overflow | : 55...138 Del.quantity cm3/: quantity cm3/10s: (40...153) 1000H: 90,0 ind. Delivery-quant. and breakaway char.: 1/min: 230 2nd speed 1st speed 1/min: 500 Del.quantity cm3/: -Charge-air pressure-setting 1000H: 60,0 ax. point hPa: 250 Del.quantity cm3/: 76,5...77,5 1000H.: (74,4...79,6) 2nd speed 1/min: 1600 Charge press. hPa: 1000 Shutoff electromagnet: Cut-in min. voltage : 20,0 Del.quantity cm3/: -1000H.: 0...2,5 Rated voltage : 24,0 3rd speed 1/min: 1500 Mounting and assembly dimensions: Charge press. hPa: 1000 Del.quantity cm3/: 16,0...22,0 Designation 1000H.: (14.5...23.5) 1/min: 1400 hPa: 1000 mm : 5,2...5,5 : 1,3..1,55 KF 4th speed mm Charge press. MS mm Del.quantity cm3/: 68,0...76,0 1000H:: (67,5...76,5) : 5,6 : 17,0...19,0 SVS max. mm ХK mm 1/min: 1350 : 14,2...17,6 5th speed XL mm hPa: 1000 Charge press. Del.quantity cm3/: 1000H.: (82,0...91,0)
6th speed 1/min: 1000
Charge press. hPa: 1000 Remarks: Correction at adjusting nut (46) Del.quantity cm3/: -1000H.: (91,4...96,6) 1/min: 500 7th speed Charge press. hPa: 1000 Del.quantity cm3/: 82,0...85,0 1000H.: (80,9...86,1) 1/min: 500 8th speed Charge press. hPa: Deliquantity cm3/: 1000H: (66,4...71,6) Zero delivery (stop):

Full-load del. w/out charge press.: BOSCH-INJ.-PUMP TEST SPECIFICATIONS 1/min : 1000 Note inst. in remarks column Del.quantity cm3/ 1000H.: 55.0...56.0 cm3/: 3.5 : FIA 3,6K1 Test sheet Dispersion Edition : 18.12.86 1000H.: (4,0) replaces Calibrating oil : ISO 4113 Low-idle speed regulation: : VE 4/11F1500 R264 Injection pump Speed 1/min: 325 Del.quantity cm3/ 1000H.: 7,0...11,0 Type number : 0 460 414 040 Customer-specific information Dispersion cm3/: 3,5 Customer : FIAT-IVECO 1000H.: (4,0) Full-load speed regulation: Engine : 8040.05.200 1/min: 1600 Speed TEST BENCH REQUIREMENTS Del.quantity cm3/ 1000H: 38,0...44,C Calibrating-oil return temp. Start: with thermometer : 40...48 electronically : 42...50 Speed 1/min: 100 Del.quantity mind. Inlet press., bar: 0.2 cm3/1000H.: 65.0 Calibrating nozzle-holder Inspection-pump test specifications : 1 688 901 020 assembly Test specifications in parentheses Opening bar: 172...175 Timing-device characteristic: pressure Perforated-plate 1st speed 1/min: 700 mm: 0,6...1,4 mm: (0,3...1,7) diameter mm : 0.6TD travel 2nd speed 1/min: 1000 Test inj. tubing : 1 680 750 017 TD travel mm: mm: (3,0...4,4)3rd speed Outside diameter 1/min: 1300 mm: 5,8...6,4 mm: (5,4...6,8) 1/min: 1500 x Wall thickness : 2 TD travel x Length mm: 840 4th speed Start of delivery TD travel mm: 6,2...7,0 mm: (5,9...7,3) Prestroke mm: 0,2(from BDC): +-0.02(0.04)Supply-pump pressure characteristic: Injection-pump setting values Test specifications in parentheses 1st speed 1/min: 700 Supply-pump bar: 3,3...3,9 1/min: 1500 Timing-device travel: pressure 2nd speed 1/min: 1000 Supply-pump Speed bar: 6,3...6,9 Setting value mm: 3,5...3,9 pressure Overflow quantity at overflow valve: Supply-pump pressure: 1/min: 1000 1st speed 1/min: 700 Speed Oveflow Setting value bar: 4,5...5,1 : 41...83 quantity cm3/10s: (26...98)

A23

```
1/min: 1500
: 55...138
2nd speed
Over flow
 quantity cm3/10s: (40...153)
Delivery-quant. and breakaway char.:
1st speed
                1/min: 1750
Del.quantity cm3/: -
               1000H.: 0...2,5
3rd speed 1/min: 1650
Del.quantity cm3/: 15.5...24.5
1000H.: (15.5...24.5)
4th speed 1/min: 1600
Del.quantity cm3/: 1600
Del.quantity cm3/: -
1000H.: (36,5...45,5)
5th speed
                1/min: 1500
Del.quantity cm3/: 52,5...55,5
1000H.: (51,4...56,6)
                1/min: 1300
6th speed
Del.quantity cm3/: 51.5...54.5
1000H.: (50.4...55.6)
7th speed
                1/min: 1000
Del.quantity cm3/: -
1000H.: (52,9...58,1)
                1/min: 700
8th speed
Del.quantity cm3/: 53,0...56,0
                1000H: (51,1...57,9)
Zero delivery (stop):
Mech. shutoff:
                1/min: 1500
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
                1/min: 325
Del.quantity cm3/: -
               1000H.: (4,5...13,5)
2nd speed
                1/min: 360
Del.quantity cm3/: 1,5...7,5
1000H.: (0...9,0)
3rd speed
                1/min: 420
Del.quantity cms/: -
1000H.: 0...1,5
Automatic starting fuel delivery:
1st speed
                1/min: 150
Del.quantity cm3/: -
                1000H: 70,0
 ind.
2nd speed
                1/min: 230
Del.quantity cm3/: -
                1000H: 30,0
Shutoff electromagnet:
Cut-in
                      : 20,0
 min. voltage
```

A24

Rated voltage : 24,0

Mounting and assembly dimensions:

Designation
K mm : -

KF mm : 5,2...5,5
MS mm : 1,8..2,05
SVS max. mm : XK mm : 17,0...19,0
XL mm : 13,1...16,5

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : FIA 3,6 K2 Edition replaces : 18.12.86

Calibrating oil : ISO 4113

Injection pump : VE 4/11F1350 R268
Type number : 0 460 414 043

Type number : 0 460 414 043

Customer-specific information Sustomer : FIAT-IVECO

Engine : 8040.25R230

Power k: 74

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0.2

Calibrating nozzle-holder

: 1 688 901 020 assembly

Opening

bar: 172...175 pressure

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,4

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1000 Setting value mm: 4,2...4,6

Supply-pump pressure:

Speed 1/min: 1000

Setting value bar: 5,1...5,7 Overflow quantity at overflow valve: Full-load del. w/out charge press.: 1/min: 500 1st speed : 41...83 Oveflow Speed 1/min : 800 cm3/10s: (26...98) quantity 1/min: 1350 Del.quantity cm3/ 2nd speed 1000H.: 82,5...83,5 cm3/: 3,5 Over flow *55...*138 Dispersion quantity cm3/10s: (40...153) 1000H.: (4.0) Delivery-quant. and breakaway char.: Low-idle speed regulation: 1st speed 1/min: 1600 Del.quantity cm3/: -1000H:: 0...2,5 Speed 1/min: 350 1/min: 1550 Del quantity cm3/3rd speed 1000H.: 22,0...26,0 cm3/: 3,5 1000H.: (4,0) Del.quantity cm3/: 1.5...9.5 1000H.: (1.0...10.0) Dispersion 1/min: 1500 4th speed Del.quantity cm5/: - (21,5...30,5) Full-load speed regulation: 1/min: 1350 1/min: 1500 Speed 5th speed Del.quantity cm3/: 72.0...75.0 1000H.: (70,9...76,1) Del.quantity cm3/ 1000H: 23,0...29,0 1/min: 1250 6th speed Del.quantity cm3/: 75,2...77,8 1000H.: (73,9...79,1) Start: 1/min: 800 Speed 1/min: 100 7th speed Del.quantity cm3/: -1000H.: (80,4...85,6) Del.quantity mind. cm3/1000H.: 90,0 1/min: 500 8th speed Del.quantity cm3/: 66,5...69,5 1000H: (64,6...71,4) Inspection-pump test specifications Test specifications in parentheses Zero delivery (stop): Timing-device characteristic: 1000H. 1st speed 1/min: 700 Idle delivery: mm: 1,2...2,0 mm: (0,9...2,3) TD travel 1st speed 1/min: 350 1/min: 1000 Del.quantity cm3/: -2nd speed 1000H.: (19,5..28,5) TD travel mm: 2nd speed 1/min: 400 Del.quantity cm3/: 3,0...9,0 1000H.: (1,5...10,5) mm: (3,7...5,1)1/min: 1200 3rd speed mm: 5,7...6,3 mm: (5,3...6,7) TD travel 1/min: 460 3rd speed 1/min: 1350 4th speed Del.quantity cm3/: -1000H.: 0...2,5 mm: 6,2...7,0 mm: (5,9...7,3) TD travel Automatic starting fuel delivery: Supply-pump pressure characteristic: 1/min: 150 1st speed 1/min: 500 Del.quantity cm3/: -1st speed 1000H: 90,0 Supply-pump bar: 3,1...3,7 1/min: 700 pressure 2nd speed 1/min: 230 2nd speed Supply-pump Del.quantity cm3/: bar: 4,0...4,6 1/min: 1350 1000H: 50.0 pressure ax. 3rd speed Supply-pump Shutoff electromagnet: pressure bar: 6,6...7,2

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation K
KF
MS
SVS max. mm mm : 5,2...5,5 mm : 1,3..1,55

mm ΧK

mm : 17,0...19,0 mm : 14,0...17,4 XL

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : IHC 3,9 Y1 Edition replaces : 10.12.86 : 9.85 Calibrating oil : ISO-4113

Injection pump : VE 4/11F1150 R140-1 Type number : 0 460 414 049 : 0 460 414 049

Type number

Customer-specific information Customer

Engine : DT 239/856

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder : 1 688 901 020 assembly

Opening bar : 172...175 pressure

Perforated-plate diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,2 (from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800 Charge press. hPa: 800

Setting value mm: 4,5...4,9

Supply-pump pressure:

Speed 1/min: 800 Charge press. hPa: 800

```
Setting value bar: 5,3...5,9
                                                                              1/min: 400
                                                              1st speed
                                                              Charge press. hPa: 800
Full-load del. with charge press.:
                                                              Supp [y-pump
                                                                              bar: 3,7...4,3
1/min: 1150
                                                               pressure
                1/min: 800
                                                              2nd speed
Speed
Charge press. hPa: 800
                                                                               hPa: 800
                                                              Charge press.
Del.quantity cm3/
1000H.: 92,2...93,2
hispersion cm3/: 3,5
                                                              Supply-pump
                                                               pressure
                                                                                bar: 6,4...7,0
               1000H : (4,0)
                                                             Overflow quantity at overflow valve:
Full-load del. w/out charge press.:
                                                              1st speed
                                                                             1/min: 500
                                                              Charge press. hPa: -
                                                                                    : 55...138
               1/min : 500
                                                              Oveflow
                                                               quantity cm3/10s: (40...153)
Del.quantity cm3/
                                                              2nd speed 1/min: 1150
               1000H.: 75,5...77,5
                                                              Charge press. hPa: 800
                                                              Overflow
                                                                                   : 55,...138
Low-idte speed regulation:
                                                               quantity cm3/10s: (40...153)
                1/min: 350
Speed
                                                             Delivery-quant. and breakaway char.: 1st speed 1/min: 800
Charge press. hPa: -
Del.quantity cm3/
1000H.: 23.0...27.0
Dispersion cm3/: 3.5
                                                             Charge-air pressure-setting
                                                                                hPa: 300
                                                               point
                                                                                 mm: 4,9
               1000H.: (4,0)
                                                             LDA stroke
                                                             Del.quantity cm3/: 86,4...90,4
1000H.: -
Full-load speed regulation:
                                                             cnd speed 1/min: 1300
Charge press. hPa: 800
Delographity
                1/min: 1270
Speed
Charge press. hPa: 800
                                                             Del.quantity cm3/: -
1000H.: 0...2,5
Deliquantity cm3/
                1000H: 22,0...28,0
                                                                             1/min: 1270
                                                             3rd speed
                                                             3rd speed 1/min: 1270
Charge press. hPa: 800
Del.quantity cm3/: -
1000H.: 21,5...29,5))
4th speed 1/min: 1230
Charge press. hPa: 800
Del.quantity cm3/: 66,0...74,0
1000H.: (65,5...74,5)
Start:
                1/min: 100
Speed
Charge press. hPa: -
Del.quantity mind.
cm3/1000H.: 100
                                                                              1/min: 1130
Insection comp test specifications
                                                             5th speed
                                                             Charge press. hPa: 800
Tesa special cations in parentheses
                                                             Del.quantity cm3/: 85.4...88.4
1000H.: (84.3...98.5)
                                                                              1/min: 800
Timeng sovice characteristic:
                                                             6th speed
                                                             Charge press. hPa: 800
Del.quantity cm3/: -
1000H: (90,1...95,3)
                1/min: 400
1st speed
Charge press. hPa: 800
                                                                              1/min: 800
                    mm: 0,8...1,6
                                                             7th speed
TD travel
                                                             Charge press. hPa: 300 Del.quantity cm3/: -
                    mm: (0,5...1,9)
                1/min: 800
2nd speed
                                                                            1000H.: (85,0...91,8)
Charge press. hPa: 800
                                                                             1/min: 500
TD travel
                    mm: -
                                                             8th speed
                                                             Charge press. hPa: 230
Del.quantity cm3/: 83,5...84,5
1000H: (81,4...86,6)
                mm: (4,5...4,9)
1/min: 1150
3rd speed
Charge press. hPa: 800
                                                                              1/min: 500
                    mm: 5,3...6,0
mm: (5,0...6,3)
                                                             9th speed
TD travel
                                                             Charge press. hPa: -
                                                             Del.quantity cm3/: -
                                                                             1000H: (73,9...79,1)
Supply-pump pressure characteristic:
```

```
Zero delivery (stop):
Mech. shutoff:
               1/min: 1150
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
               1/min: 350
Del.quantity cm3/: -
1000H.: (20,5..29,5)
2nd speed 1/min: 400
Del.quantity cm3/: 5.0...11.0
1000H.: (3.5...12.5)
3rd speed 1/min: 450
Del.quantity cm3/: -
1000H.: 0...3,0
Automatic starting fuel delivery:
               1/min: 220
1st speed
Del.quantity cm3/: -
               1000H: 100,0
 ind.
               1/min: 300
2nd speed
Del.quantity cm3/: -
               1000H: 80,0
 ax.
Shutoff electromagnet:
Cut-in
min. voltage
                     : 10,0
Rated voltage
                     : 12,0
Mounting and assembly dimensions:
Designation
K
KF
                mm
                     : 5,2...5,4
                mm
                     4ر1...2ر1 :
MS
                mm
                     : 5,0
SVS max.
                mm
                     20,2...22,2
XK
                mm
XL
                mm
Remarks:
Correction at adjusting nut (46)
```

BOSCH-INJ.-PUMP TEST SPECIFICATIONS 1/min : 800 Note inst. in remarks column Del.quantity cm3/ 1000H.: 81,5...82,5 cm3/: 3,5 : IHC 3,9 Y7 Test sheet Dispersion Edition : 12.12.86 1000H.: (4,0) replaces Calibrating oil : ISO 4113 Low-idle speed regulation: 1/min: 350 : VE 4/11F109C R176-1 Injection pump Speed Del.quantity cm3/ 1000H.: 21.5...25.5 Dispersion cm3/: 3.5 1000H.: (4.0) Type number : 0 460 414 050 Customer-specific information Customer Full-load speed regulation: : D239-E833 Engine 1/min: 1200 Speed TEST BENCH REQUIREMENTS Del.quantity cm3/ 1000H: 12,0...18,0 Calibrating-oil oC return temp. Start: with thermometer : 40...48 electronically : 42...50 Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 100 Inlet press., bar : 0.2 Calibrating nozzle-holder Inspection-pump test specifications : 1 688 901 020 Test specifications in parentheses assembly Opening bar: 172...175 pressure Timing-device characteristic: 1/min: 400 Perforated-plate 1st speed mm: 1,7...2,5 diameter mm : 0.6TD travel mm: (1,4...2,8)1/min: 800 2nd speed Test inj. tubing : 1 680 750 017 TD travel mm: mm: (4,3...5,7) 1/min: 1050 Outside diameter : 6 3rd speed mm: 5,4...6,2 x Wall thickness : 2 TD travel mm: 840 mm: (5,1...6,5)x Length Start of delivery Supply-pump pressure characteristic: Prestroke mm: 0,2 (from BDC): +-0.02(0.04)1/min: 400 1st speed Supply-pump pressure bar: 3,5...4,1 Injection-pump setting values 1/min: 1050 Test specifications in parentheses 2nd speed Supply-pump bar: 6,0...6,6 Timing-device travel: pressure 1/min: 800 Overflow quantity at overflow valve: Speed Setting value mm: 4,8...5,2 1/min: 500 : 55...138 1st speed Oveflow Supply-pump pressure: cm3/10s: (40...153) 1/min: 1090 quantity 1/min: 800 2nd speed Sheed Over flow : 55...138 Setting value bar: 5,1...5,7 quantity cm3/10s: (40...153)

B03

Full-load del. w/out charge press.:

```
Pelivery-quant. and breakaway char.:
1st speed
               1/min: 1270
Del.quantity cm3/: -
              1000H.: 0...2,0
3rd speed
               1/min: 1200
Del.quantity cm3/: -
1000H.: (10,5...19,5)
4th speed 1/min: 1150
Del.quantity cm3/: 47.0...53.0
1000H.: (45.5...54.5)
               1/min: 1050
5th speed
Del.quantity cm3/: 78,5...81,5
1000H.: (77,4...82,6)
               1/min: 800
6th speed
Del.quantity cms/.
               cm3/:
                       (6, 84, 6, 79)
               1/min: 650
7th speed
Del.quantity cm3/: 75,0...79,0
1000H.: (73,6...80,4)
               1/min: 500
8th speed
               cm3/: 65,5...69,5
Del.quantity
               1000H: (64,1...70,9)
Zero delivery (stop):
Mech. shutoff:
               1/min: 1090
Speed
Del.quantity cm3/: -
              1000H.
Idle delivery:
               1/min: 350
1st specu
Del.quantity cm5/:
1000H.:
1st speed
                       (19,0..28,0)
               1/min: 400
2nd speed
              cm3/: 4,5...10,5
1000H.: (3,0...12,0)
Del.quantity
               1/min: 460
3rd speed
Del.quantity cm3/: -
              1000H.: 0...2,0
Automatic starting fuel delivery:
1st speed
               1/min: 220
Del.quantity cm3/: -
               1000H: 100,0
 ind.
2nd speed
               1/min: 300
Del.quantity
               cm3/:
               1000H: 70,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
Rated voltage
```

Mounting and assembly dimensions:

B04

Designation K mm : KF mm : 5,1...5,4
MS mm : 1,0..1,25
SVS max. mm : 3,2

Remarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : VMA 2,4 B
Edition : 3.12.86
replaces : 4.84
Calibrating oil : ISO 4113

Injection pump : VE 5/11F1900 L179 Type number : 0 460 415 007

Customer-specific information Customer : MOTORI VM

Engine : HR 592 HTJ/9

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +-0.02(0.04)

Injection-pump setting values
Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value mm: 4,9...5,3

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value bar: 4,7...5,3

Full-load del. with charge press .:

2nd speed 1/min: 1900 1/min: 1500 Charge press. hPa: 1000 Speed Charge press. hPa: 1000 Supply-pump bar: 6,0...6,6 Del.quantity cm3/ pressure 1000H.: 66,5...67,5 Dispersion cm3/:3,5Overflow quantity at overflow valve: 1000H : -1/min: 600 1st speed Charge press. hPa: -Oveflow : 5 Full-load del. w/out charge press.: quantity cm3/10s: (40...153) Speed 1/min : 600 Del.quantity cm3/ 2nd speed 10min: 1900 1000H.: 41,5...42,5 Charge press. hPa: 1000 Overflow : 55...138 quantity cm3/10s: (40...153) Low-idle speed regulation: Delivery-quant. and breakaway char.: 1st speed 1/min: 700 Speed 1/min: 420 Charge press. hPa: -1st speed Del.quantity cm3/ 1000H.: 20,5...24,5 hisnersion cm3/: 3,5 Charge-air pressure-setting point hPa: 300 LDA stroke mm: 4,5
Del.quantity cm3/: 51,0...52,0
1000H.: (48,1...54,9)
2nd speed 1/min: 2200 1000H.: -Full-load speed regulation: 2nd speed Charge press. hPa: 1000 1/min: 2060 Speed Del.quantity cm3/: -1000H.: 0...3,0 Charge press. hPa: 1000 Del.quantity cm3/ 3rd speed 1/min: 2160 Charge press. hPa: 1000 Del.quantity cm3/: 2.0...8.0 1000H.: (0.5...9.5) 4th speed 1/min: 2060 1000H: 36,0...42,0 Start: Speed 1/min: 100 Charge press. hPa: 1000
Del.quantity cm3/: 1000H.: (34,5...43,5)
Sth speed 1/min: 1900
Charge press. hPa: 1000
Del.quantity cm3/: 59,0...62,0
1000H.: (57,8...63,2) Del.quantity mind. cm3/1000H.: 50,0 Inspection-pump test specifications Test specifications in parentheses 1/min: 1500 Timing-device characteristic: 6th speed Charge press. hPa: 1000 Del.quantity cm3/: -1000H.: (64,3...69,7) 1st speed 1/min: 1000 Charge press. hPa: 1000 mm: 1,5...2,3 mm: (1,2...2,6) 1/min: 600 TD travel 7th speed Charge press. hPa: -Det.quantity cm3/: -1000H:: (38,6...45,4) 1/min: 1500 2nd speed Charge press. hPa: 1000 TD travel mm: mm: (4,4...5,8)Zero delivery (stop): 1/min: 1900 3rd speed Charge press. hPa: 1000 Mech. shutoff: mm: 7,1...7,9 mm: (6,8...8,2) TD travel Speed 1/min: -Del.quantity cm3/: - 1000H. Supply-pump pressure characteristic: Electr. shutoff: 1/min: 1900 1st speed 1/min: 600 Speed ELAB hPa: 1000 volt: 12,0 Charge press. Supply-pump Del.quantity cm3/: - 1000H. bar: 1,7...2,3 pressure **B**06

```
Idle delivery:
               1/min: 420
1st speed
Del.quantity cm3/: -
1000H.: (18,0..27,0)
               1/min: 500
2nd speed
Del.quantity cm3/: 14.0..20.0
1000H.: (12.5..21.5)
3rd speed 1/min: 650
Del.quantity cm3/: -
1000H.: 0...2,0
Automatic starting fuel delivery:
1st speed
               1/min: 280
Del.quantity cm3/: -
               1000H: 50,0
 ind.
               1/min: 380
2nd speed
Del.quantity cm3/: -
               1000H: 55,0
Shutoff electromagnet:
Cut-in
                     : 10,0
: 12,0
 min. voltage
Rated voltage
Mounting and assembly dimensions:
Designation
K
                 mm
                     : 5,9...6,1
: 0,9...1,1
: 3,2
KF
                mm
MS
                mm
SVS max.
                TE ST
Remarks:
Pushing electromagnet.
Correction at adjusting nut (46)
```

Del.quantity cm3/ 1000H.: 63,5...64,5 Dispersion cm3/: 3,5 1000H.: (4,0) BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column : FIA 5.5 0 Test sheet Low-idle speed regulation: : 16.12.86 Edition : 6.84 1/min: 325 replaces Speed Del.quantity cm3/ 1000H.: 8,0...12,0 Calibrating oil : ISO 4113 cm3/: 3.5 1000H.: (4,0) : VE 6/11F1250 R181 Injection pump Dispersion : 0 460 416 036 Type number Full-load speed regulation: Customer-specific information Customer : FIAT 1/min: 1350 Speed Del.quantity cm3/ : 8065.06.200 1000H: 33,0...39,0 Engine TEST BENCH REQUIREMENTS Start: Calibrating-oil return temp. °C 1/min: 100 Speed Del.quantity mind. With thermometer : 40...48 cm3/1000H.: 95.0 : 42...50 electronically Inspection-pump test specifications Test specifications in parentheses Inlet press., bar: 0.2 Calibrating nozzle-holder : 1 688 901 020 assembly Timing-device characteristic: Opening 1st speed 1/min: 600 mm: 0,7...1,5 bar: 172...175 TD travel pressure mm: (0,4...1,8) 1/min: 1000 Perforated-plate 2nd speed diameter mm: 0.6 TD travel mm: mm: (4,4...5,8) 1/min: 1250 mm: 5,4...6,2 mm: (5,1...6,5) 3rd speed Test inj. tubing : 1 680 750 017 TD stravel Outside diameter : 6 x Wall thickness : 2 Supply-pump pressure characteristic: mm: 840 x Length 1/min: 500 1st speed Supply-pump Injection-pump setting values bar: 3,1...3,7 1/min: 1250 Test specifications in parentheses pressure 2nd speed Supply-pump Timing-device travel: pressure bar: 6,3...6,9 1/min: 1000 Speed Overflow quantity at overflow valve: Setting value mm: 4,9...5,3 1/min: 500 1st speed Supply-pump pressure: Oveflow : 55...138 quantity cm3/10s: (40...153) 2nd speed 1/min: 1250 Speed 1/min: 1000 Setting value bar: 5,2...5,8 : 55..138 Over flow quantity cm3/10s: (40...153) Full-load del. w/out charge press.: 1/min : 800 Delivery-quant. and breakaway char.: Speed 1st speed 1/min: 1450

```
Del.quantity cm3/: -
1000H.: 0...2,0
3rd speed
                 1/min: 1400
                cm3/: 2,0...9,0
1000H.: (1,0...10,0)
Del.quantity
                 1/min: 1350
4th speed
Ath speed Del.quantity cm3/: - 1000H.: (31,5...40,5) Sth speed 1/min: 1250 Del.quantity cm3/: 53,0...56,0 1000H.: (51,9...57,1)
                 1/min: 800
6th speed
Del.quantity cm3/: -
1000H.: (61,4...66,6)
                 1/min: 500
7th speed
Del.quantity cm3/: 58,5...61,5
1000H.: (56,6...63,4)
Zero delivery (stop):
Mech. shutoff:
                 1/min: 1250
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
                 1/min: 325
1st speed
Del.quantity cm3/: -
                1000H.: 3,5...14,5)
                 1/min: 360
2nd speed
Del.quantity cm3/: 2,0...8,0
1000H.: (0,5...9,5)
3rd speed
                 1/min: 400
3rd specu
Del.quantity cms/: -
1000H.: 0...3,0
Automatic starting fuel delivery:
1st speed
                 1/min: 150
Del.quantity cm3/: -
                 1000H: 95,0
  ind.
2nd speed
                 1/min: 250
Del.quantity cm3/: -
                 1000H: 60,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
                        : 10,0
Rated voltage
                        0ر12 :
Mounting and assembly dimensions:
Designation
                        : 3,2...3,4
: 5,2...5,4
: 1,5...1,7
: 4,3
K
                   mm
KF
                   mm
MS
                   mm
SVS max.
                   mm
B09
```

XK mm : 25,0...27,0 XL mm : 13,4...16,8

Note inst. in remarks column

Test sheet : VOL 4.1 C Edition : 02.04.87

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/11F1900 L218 Type number : 0 460 416 047

Customer-specific information Customer : VOLVO PENTA

Engine : TAMD 41

Fower k: 147

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value mm: 3,6...4,0

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value bar: 6,6...7,2

1	Supply-pump pressure characteristic:
Full-load del. with charge press.:	
	1st speed
Speed 1/min: 1500	Charge press. hPa: 1000
Charge press. hPa: 1000	Supply-pump
Deliquantity cm3/	pressure bar: 5.56.1 2nd speed 1/min: 1900
1000H.: 102,0103,0	Zna speed 1/min: 1900
Dispersion cm3/: 3,5	Charge press, hPa: 1000
100011 ,	Supply-pump pressure bar: 7,48,0
Full-load del. w/out charge press.:	pi cosui c
1 1 1	Overflow-quantity at overflow valve:
Speed 1/min: 650	
Del.quantity cm3/	1st speed 1/min: 650
1000H.: 65,566,5	Charge press. hPa: -
.	Oveflow : 4183
Low-idle speed regulation:	quantity cm3/10s: (2698)
Conn. 1/min. 750	2nd speed 1/min: 1900
Speed 1/min: 350	Charge press. hPa: 1000 Overflow : 55138
Charge press. hPa: -	quantity cm3/10s: (40153)
Del.quantity cm3/ 1000H.: 18,022,0	quarterty this ros. (40111155)
vispersion cm3/: 3,5	Delivery-quant. and breakaway char.:
1900H.: -	1st speed 1/min: 800
Full-load speed regulation:	Charge-air pressure-setting
	point hPa: 200
Speed 1/min: 2000	Del.quantity cm3/: 86,587,5 1000H.: (84,389,7)
Charge press. hPa: 1000	1000H.: (84,389,7)
Deliquantity cm3/	2nd speed 1/min: 2200
1000H: 67,073,0	Charge press. hPa: 1000
Start:	Del.quantity cm3/: - 1000H.: 02,5
Jean C.	3rd speed 1/min: 2100
Speed 1/min: 100	Charge press. hPa: 1000
Del.quantity mind.	Del.quantity cm3/: 5,015,0
cm3/1000H.: 80.0	1000H.: (4,016,0)
	4th speed 1/min: 2000
Inspection-pump test specifications	Charge press. hPa: 1000
Test specifications in parentheses	Del.quantity cm3/: ~
	1000H.: (65,574,5)
Timinordavica characteristic:	5th speed 1/min: 1900 Charge press. hPa: 1000
Timing-device characteristic:	Del. quantity cm3/: 91_094_0
1st speed 1/min: 1000	1000H.: (88,097,0)
Charge press. hPa: 1000	6th speed 1/min: 1500
TD travel mm: 1,02,0	Charge press. hPa: 1000
mm: (0,82,2)	Del.quantity cm3/: -
and speed 1/min: 1500	1000H.: (99,8105,2)
Charge press. hPa: 1000	7th speed 1/min: 800
TD travel mm: -	Charge press. hPa: 1000
mm: (3,14,5) 3rd speed	Del.quantity cm3/: 91,094,0 1000H.: (89,895,2)
	8th speed 1/min: 800
The travel mm: 4,55,3	Charge press. hPa: -
mm: (4,25,6)	Del.quantity cm3/: 68,871,2
4th speed 1/min: 1900	1000H: (66,773,4)
Charge press. hPa: 1000	9th speed 1/min: 650
TD travel mm: 4,55,3	Charge press. hPa: -
mm: (4,25,6)	Del.quantity cm3/: -
	1000H: (62.669.4)

```
Zero adelivery (stop):
Mech. shutoff:
              1/min: -
Speed
Del.quantity cm3/: - 1000H.
Electr. shutoff:
              1/min: 1900
Speed
               volt: 12,0
ELAB
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
              1/min: 350
Del.quantity cm3/: -
1000H.: (15,5..24,5)
              1/min: 400
2nd speed
Del.quantity cm3/: 5.0...11.0
1000H.: (3.5..12.5)
3rd speed 1/min: 480
Del.quantity cm3/: -
1000H.: 0...2,5
Automatic starting fuel delivery:
1st speed
              1/min: 300
Deliquantity cm3/: -
 ind.
              1000H: 80,0
2nd speed
              1/min: 500
Del.quantity cm3/: -
              1000H: 75,0
Shutoff electromagnet:
Cut-in
                    : 10,0
 min. voltage
Rated voltage
                    : 12,0
Mounting and assembly dimensions:
Designation
               fiiM
KF
                   : K-0T
               mm
MS
               mm : 0,7..0,95
SVS max.
               mm : 4,0
               mm : 18,8...20,8
XK
XL
                   1,7...17 :
               mm
Remarks:
```

Note inst. in remarks column

Test sheet : VOL 4,1 D : 02.04.87 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/11F1900 L218-1 Type number : 0 460 416 048

Type number

Customer-specific information : VOLVO PENTA Customer

Engine : TAMD 41

k: 147 Power

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening | pressure bar 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm: 450

Start of delivery

Prestroke mm : 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value mm: 3,6...4,0

Supply-pump pressure:

1/min: 1500 Speed Charge press. hPa: 1000 Setting value bar: 6,6...7,2

```
Supply-pump pressure characteristic:
Full-load del. with charge press.:
                                                                         1/min: 1000
                                                          1st speed
                                                          Charge press. hPa: 1000
               1/min: 1500
Speed
Charge press. hPa: 1000
                                                          Supply-pump
                                                                         bar: 5,5...6,1
1/min: 1900
Del.quantity cm3/
1000H.: 102,0...103,0
Dispersion cm3/: 3,5
1000H:
                                                           pressure
                                                          2nd speed
                                                          Charge press.
Supply-pump
                                                                           hPa: 1000
                                                                           bar: 7,4...8,0
                                                           pressure
Full-load del. w/out charge press.:
                                                          Overflow quantity at overflow valve:
              1/min: 650
Speed
                                                                         1/min: 650
Del.quantity cm3/
                                                          1st speed
              1000H.: 65,5...66,5
                                                          Charge press. hPa: -
                                                          Oveflow
                                                         quantity cm3/10s: (26...98)
2nd speed 1/min: 1900
Low-idle speed regulation:
                                                          Charge press. hPa: 1000
Overflow: 55...
               1/min: 350
Speed
Charge press. hPa: -
                                                                               : 55...138
                                                           quantity cm3/10s: (40...153)
Deliquantity cm3/
              1000H.: 18.0...22.0 cm3/: 3,5
                                                          Delivery-quant, and breakaway char.:
Dispersion
                                                          1st speéd
              1000H.: -
                                                                        1/min: 800
                                                          Charge-air pressure-setting
Full-load speed regulation:
                                                                           hPa: 200
                                                           point
                                                         Del.quantity cm3/: 86,5...87,5
1000H.: (84,3...89,7)
2nd speed 1/min: 2200
               1/min: 2000
Charge press. hPa: 1000
Deliquantity cm3/
                                                         Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...2,5
               1000H: 67,0...73,0
Start:
                                                                         1/min: 2100
                                                          3rd speed
                                                          Charge press. hPa: 1000
               1/min: 100
Speed
                                                         Del.quantity cm3/: 5.0...15.0
1000H.: (4,0...16,0)
Del.quantity mind.
         cm3/1000H.: 80,0
                                                                         1/min: 2000
                                                          4th speed
Inspection-pump test specifications
                                                          Charge press. hPa: 1000
                                                         Del.quantity cm3/: -
1000H.: (65,5...74,5)
5th speed 1/min: 1900
Test specifications in parentheses
                                                          Charge press. hPa: 1000
Timing-device characteristic:
                                                         Del.quantity cm3/: 91.0...94.0
1000H.: (88.0...97.0)
               1/min: 1000
1st speed
Charge press. hPa: 1000
                                                                         1/min: 1500
                                                          6th speed
                                                          Charge press. hPa: 1000
                  mm: 1,0...2,0
TD travel
                                                         mm: (0,8...2,2)
               1/min: 1500
2nd speed
Charge press. hPa: 1000
                                                                         1/min: 800
                                                          7th speed
                                                         Charge press. hPa: 1000
Del.quantity cm3/: 91.0...94.0
1000H.: (89.8...95.2)
TD travel
                  mm: (3,1...4,5)
               1/min: 1700
3rd speed
Charge press. hPa: 1000
                                                                         1/min: 800
                                                          8th speed
               mm: 4,5...5,3
mm: (4,2...5,6)
1/min: 1900
                                                          Charge press. hPa:
TD travel
                                                         Del.quantity cm3/: 68,8...71,2
1000H: (66,6...73,4)
4th speed
               hPa: 1000
                                                          9th speed
                                                                         1/min: 650
Charge press.
                  mm: 4,5...5,3
mm: (4,2...5,5)
                                                          Charge press. hPa: -
TD travel
                                                          Del.quantity cm3/: -
                                                                         1000H: (62,6...69,4)
```

```
Zero delivery (stop):
             1000H.
Idle delivery:
              1/min: 350
1st speed
Del.quantity cm3/: -
1000H.: (15,5..24,5)
2nd speed 1/min: 400
Del.quantity cm3/: 5.0...11.0
1000H.: (3.5...12.5)
3rd speed
              1/min: 480
Del.quantity
              cm3/: -
             1000H.: 0...2,5
Automatic starting fuel delivery:
              1/min: 300
1st speed
Del.quantity cm3/: -
              1000H: 80,0
 ind.
              1/min: 500
2nd speed
Del.quantity cm3/: -
              1000H: 75,0
Shutoff electromagnet:
Cut-in
min. voltage
                    : 20,0
Rated voltage
                   : 24,0
Mounting and assembly dimensions:
Designation
               mm
KF
                   : K-0T
               mm
MS
                   : 0,7..0,95
               mm
                   : 4.0
: 18,8...20,8
SVS max.
               mm
XK
               mm
                   1,7...17
XL
               mm
Remarks:
Pushing electromagnet.
Correction at adjusting nut (46)
```

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Full-load del. with charge press.: Note inst. in remarks column 1/min: 1500 Speed Charge press. hPa: 1000 Del.quantity cm3/ 1000H.: 87,0...88,0 : VOL 4,1 E Test sheet Edition : 8.12.86 replaces Dispersion cm3/:-1000H : 5.0 Calibrating oil : ISO 4113 Injection pump : VE 6/11F1625 L218-4 Full-load del. w/out charge press.: : 0 460 416 054 Type number Speed 1/min : 650 Customer-specific information Del.quantity cm3/ Customer : VOLVO PENTA 1000H.: 59,0...60,0 Low-idle speed regulation: : TAMD 41 Engine Power k: 125 1/min: 350 Speed Charge press. hPa: -Del.quantity cm3/ 1900H.: 15.5...19,5 Dispersion cm3/: 3,5 TEST BENCH REQUIREMENTS Calibrating-oil return temp. °C 1000H.: -Full-load speed regulation: with thermometer : 40...48 : 42...50 electronically 1/min: 1800 Speed Charge press. hPa: 1000 Inlet press., bar: 0.2 Deliquantity cm3/ 1000H: 37,0...43,0 Calibrating nozzle-holder : 1 688 901 022 assembly Start: Opening pressure bar : 130...133 Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 85.0 Test inj. tubing : 1 680 750 073 Inspection-pump test specifications Test specifications in parentheses Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length Timing-device characteristic: Start of delivery Prestroke mm: 0,3 1/min: 800 1st speed Charge press. hPa: 1000 TD travel mm: 1.0...1.8 mm: (0.7...2.1) (from BDC): +-0.02(0.04)Injection-pump setting values Test specifications in parentheses 1/min: 1200 2nd speed Charge press. hPa: 1000 TD travel Timing-device travel: mm: mm: (3,4...4,8)1/min: 1400 1/min: 1200 3rd speed Speed Charge press. hPa: 1000 Setting value mm: 3,9...4,3 Charge press. hPa: 1000 mm: 4,5...5,3 mm: (4,2...5,6) TD travel Supply-pump pressure: Supply-pump pressure characteristic: Speed 1/min: 1200 Charge press. hPa: 1000 Setting value bar: 6,1...6,7 1st speed 1/min: 500 Charge press. hPa: 1000 **B**16

```
Supply-pump
                                                                      1/min: -
              bar: 4,7...5,3
1/min: 1625
                                                       Del.quantity cm3/: - 1000H.
 pressure
2nd speed
                 hPa: 1000
Charge press.
                                                       Electr. shutoff:
Supply-pump
                 bar: 7,3...7,9
                                                                      1/min: 1625
 pressure
                                                       Speed
                                                       ELAB
                                                                       volt: 12,0
                                                       Del.quantity cm3/: -
Overflow quantity at overflow valve:
                                                                    1000H.
1st speed
               1/min: 700
Charge press. hPa: 1000
                                                       Idle delivery:
Oveflow
                      41...83
 quantity cm3/10s: (26...98)
                                                       1st speed
                                                                      1/min: 350
2nd speed 1/min: 1625
                                                       Del.quantity cm3/: -
                                                                     1000H.: (13,0..22,0)
Charge press. hPa: 1000
Overflow
                    : 55...138
                                                                      1/min: 400
                                                       2nd speed
                                                       Del.quantity cm3/: 3,0...9,0
1000H.: (1,5...10,5)
 quantity cm3/10s: (40...153)
                                                                      1/min: 450
                                                       3rd speed
Delivery-quant. and breakaway char.:
                                                       Del.quantity cm3/: -
1000H.: 0...3,0
1' speed
              1/min: 800
Charge-air pressure-setting
 point
                 hPa: 260
Del.quantity cm3/: 66,0...67,0
                                                       Automatic starting fuel delivery:
             1000H.: (63,8...69,2)
               1/min: 1970
2nd speed
                                                       1st speed
                                                                      1/min: 300
Charge press. hPa: 1000
                                                       Del.quantity cm3/: -
Del.quantity cm3/: -
1000H.: 0...3,0
                                                        ind.
                                                                      1000H: 85,0
              1/min: 1900
3rd speed
                                                       2nd speed
                                                                      1/min: 500
Charge press. hPa: 1000
Del.quantity cm3/: 2,5...10,5
1000H.: (2,0...11,0)
                                                       Del.quantity cm3/: -
                                                                      1000H: 80,0
              1/min: 1800
                                                       Shutoff electromagnet:
4th Speed
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: (35,5...44,5)
5th speed 1/min: 1625
                                                       Cut-in
                                                                           : 10,0
                                                        min. voltage
                                                       Rated voltage
                                                                           : 12.0
Charge press. hPa: 1000
Del.quantity cm3/: 80,0...83,0
1000H.: (78,8...84,2)
                                                       Mounting and assembly dimensions:
              1/min: 1500
6th speed
                                                       Designation
Charge press. hPa: 1000
                                                                       mm
Del.quantity cm3/: -
1000H.: (84,8...90,2)
                                                       KF
                                                                      mm
                                                                           : K-0T
                                                       MS
                                                                      mm
                                                                           : 1,2..1,45
7th speed
              1/min: 1000
                                                       SVS max.
                                                                      mm
                                                                           : -
                                                                          8,20,30 :
Charge press. hPa: 1000
                                                       XK
                                                                      mm
Del.quantity cm3/: 93,8...96,2
                                                       XL
                                                                      mm
                                                                          6, 2...15 :
             1000H.: (92,3...97,7)
              1/min: 800
8th speed
                                                       Remarks:
Charge press. hPa: 1000
Del.quantity cm3/: 91,5...94,5
1000H: (89,6...96,4)
                                                       Pushing electromagnet.
              1/min: 650
9th speed
Charge press. hPa: -
Del.quantity cm3/: -
                                                       Correction at adjusting nut (46)
               1000H: (56,8...62,2)
Zero delivery (stop):
```

Mech. shutoff:

```
BOSCH-INJ.-PUMP TEST SPECIFICATIONS
                                                     Full-load del. with charge press.:
                                                     Speed 1/min: 1500
Charge press. hPa: 1000
Note inst. in remarks column
                   : V0L4,1 F
                                                     Del.quantity cm3/
Test sheet
                                                                  1000H.: 87,0...88,0
Edition
                   : 8.12.86
replaces
                                                                   cm3/:5,0
                                                     Dispersion
Calibrating oil
                   : ISO 4113
                                                                  1000H: -
                                                     Full-load del. W/out charge press.:
Injection pump
                   : VE 6/11F1625 L218-5
Type number
                   : 0 460 416 055
                                                     Speed
                                                                  1/min : 650
                                                     Del.quantity cm3/
1000H.: 59,0...60,0
Customer-specific information
                   : VOLVO PENTA
Customer
                                                     Low-idle speed regulation:
                   : TAMD 41
Engine
Power
                  k: 125
                                                     Speed
                                                                   1/min: 350
                                                     Charge press. hPa: -
                                                     Del.quantity cm3/
1000H.: 15.5...19,5
Dispersion cm3/: 3,5
TEST BENCH REQUIREMENTS
Calibrating-oil return temp. °C
                                                                  1000H.:
with thermometer : 40...48
                                                     Full-load speed regulation:
                  : 42...50
electronically
                                                     Speed
                                                                   1/min: 1800
                                                     Charge press. hPa: 1000
Inlet press., bar: 0.2
                                                     Del.quantity cm3/
                                                                   1000H: 37,0...43,0
Calibrating nozzle-holder
                   : 1 688 901 022
 assembly
                                                     Start:
Opening
 pressure bar : 130...133
                                                                   1/min: 100
                                                     Speed
                                                     Del.quantity mind.
                                                              cm3/1000H.: 85,0
Test inj. tubing : 1 680 750 073
                                                     Inspection-pump test specifications
                                                     Test specifications in parentheses
Outside diameter
x Wall thickness
x Length
                mm: 450
                                                     Timing-device characteristic:
Start of delivery
Prestroke
               mm: 0.3
                                                     1st speed
                                                                   1/min: 800
                                                     Charge press. hPa: 1000
         (from BDC): +-0,02(0,04)
                                                     TD travel
                                                                      mm: 1,0...1,8
                                                     mm: (0,7...2,1)
2nd speed 1/min: 1200
Charge press. hPa: 1000
TD travel
Injection-pump setting values
Test specifications in parentheses
                                                     TD travel
Timing-device travel:
                                                                      mm:
                                                                      mm: (3,4...4,8)
                                                                   1/min: 1400
              1/min: 1200
                                                     3rd speed
Speed
Charge press. hPa: 1000
Setting value mm: 3,9...4,3
                                                     Charge press. hPa: 1000
                                                                      mm: 4,5...5,3
mm: (4,2...5,6)
                                                     TD travel
Supply-pump pressure:
                                                     Supply-pump pressure characteristic:
              1/min: 1200
Speed
Charge press. hPa: $000
                                                                   1/min: 500
                                                     1st speed
Setting value bar: 6,1...6,7
                                                     Charge press. hPa: 1000
B18
```

```
Supply-pump
                                                                          1/min: -
               bar: 4,7...5,3
1/min: 1625
                                                          Del.quantity cm3/: - 1000H.
 pressure
2nd speed
Charge press.
                  hPa: 1000
Supp Ty-pump
                                                          Electr. shutoff:
                  bar: 7,3...7,9
 pressure
                                                          Speed
                                                                          1/min: 1625
                                                          Del.quantity cm3/: - 1000H.
Overflow quantity at overflow valve:
1st speed
               1/min: 700
                                                          Idle delivery:
Charge press. hPa: 1000
                                                                          1/min: 350
Oveflow
                     : 41...83
                                                          1st speed
 quantity cm3/10s: (26...98)
                                                          Del.quantity cm3/:
                                                                         1000H.: (13,0..22,0)
2nd speed 1/min: 1625
Charge press. hPa: 1000
                                                                          1/min: 400
                                                          2nd speed
                     : 55...138
Overflow
                                                          Del.quantity cm3/: 3,0...9,0
                                                                        1000H.: (1,5...10,5)
 quantity cm3/10s: (40...153)
                                                          3rd speed
                                                                          1/min: 450
                                                          Del.quantity cm3/: -
1000H.: 0...3,0
Delivery-quant. and breakaway char.:
1st speed
              1/min: 800
Charge-air pressure-setting
 point
                  hPa: 260
                                                          Automatic starting fuel delivery:
Del.quantity cm3/: 66.0...67.0
1000H.: (63.8...69.2)
                                                                          1/min: 300
                                                          1st speed
                1/min: 1970
                                                          Del.quantity
                                                                          cm3/: -
2nd speed
                                                                          1000H: 85.0
Charge press. hPa: 1000
                                                           ind.
Del.quantity cm3/: -
1000H.: 0...3,0
                                                                          1/min: 500
                                                          2nd speed
3rd speed 1/min: 1900
Charge press. hPa: 1000
Del.quantity cm3/: 2,5...10,5
1000H.: (2,0...11,0)
                                                                          cm3/: -
                                                          Del.quantity
                                                                          1000H: 80,0
                                                           ax.
                                                          Shutoff electromagnet:
               1/min: 1800
4th speed
Charge press. hPa: 1000
                                                          Cut-in
Deliquantity cm3/: -
                                                           min. voltage
                                                                                : 20,0
1000H.: (35,5...44,5)
5th speed 1/min: 1625
Charge press. hPa: 1000
Del.quantity cm3/: 80,0...83,0
1000H.: (78,8...84,2)
                                                          Rated voltage
                                                                                : 24,0
                                                          Mounting and assembly dimensions:
                                                          Designation
               1/min: 1500
6th speed
                                                          K
                                                                           mm
                                                          KF
                                                                                : K-0T
Charge press. hPa: 1000
                                                                           mm
Del.quantity cm3/: -
1000H.: (84,8...90,2)
                                                                               : 1,2..1,45
                                                          MS
                                                                           mm
                                                                               : 3,6
: 18,8...20,8
                                                          SVS max.
                                                                           mm
               1/min: 1000
                                                          XK
                                                                           mm
7th speed
                               Charge press. hPa: 1000
Del.quantity cm3/: 93,8...96,2
1000H.: (92,3...97,7)
8th speed 1/min: 800
                                                          XL
                                                                                : 12,2...15,6
                                                                           mm
                                                          Remarks:
                                                          Pushing electromagnet.
Charge press. hPa: 1000
Del.quantity cm3/: 91,5...94,5
               1000H: (89,6...96,4)
                1/min: 650
9th speed
Charge press. hPa: -
                                                          Correction at adjusting nut (46)
               cm3/: -
Deliquantity
               1000H: (56,8...62,2)
Zero delivery (stop):
Mech. shutoff:
```

B19

1/min: 900 Setting value bar: 4,3...4,9 BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Full-load del. w/out charge press.: 1/min: 900 : CUM 3,9 A5 Test sheet Speed : 22.10.86 Edition Del.quantity cm3/ 1000H.: 70,5...71,5 : 4.85 replaces cm3/: 4,0 Calibrating oil : ISO-4113 Dispersion 1000H.: (4,5) Injection pump : VE 4/12F1100 R123-5 : 0 460 424 011 Type number Low-idle speed regulation: Customer-specific information 1/min: 375 Del.quantity cm3/ Customer : CUMMINS 1000H.: 8,0...14,0 : 4 BT-390 Engine Full-load speed regulation: k: 60 1/min: 1120 Power Speed 1/mi: 2200 Del.quantity cm3/ Speed 1000H: 52,0...58,0 TEST BENCH REQUIREMENTS Start: Calibrating-oil return temp. 1/min: 100 Speed with thermometer : 40...48 Del.quantity mind. cm3/1000H.: 97,0 electronically : 42...50 Inlet press., bar : 0.2 Inspection-pump test specifications Test specifications in parentheses Calibrating nozzle-holder : 1 688 901 016 assembly Timing-device characteristic: Opening. bar : 207...210 1/min: 600 pressure 1st speed mm: $0, 4, \ldots, 1, 2$ TD travel mm: (0,1,...,5)Perforated-plate 1/min: 900 mm : 0.5 diameter 2nd speed TD travel mm: mm: (1,8...3,2) 1/min: 1100 Test inj. tubing : 1 680 750 017 3rd speed TD travel mm: 3,3...4,1 mm: (3,0...4,4) Outside diameter x Wall thickness : 2 mm : 840 Supply-pump pressure characteristic: x Length 1/min: 400 Start of delivery 1st speed Prestroke mm: 0.3Supply-pump bar: 2,1...2,7 1/min: 750 pressure (from BDC): +-0.02(0.04)2nd speed Supply-pump Injection-pump setting values bar: 3,7...4,3 pressure Test specifications in parentheses 1/min: 1100 3rd speed Timing-device travel: Supply-pump bar: 5,2...5,8 pressure 1/min: 900 Speed Overflow quantity at overflow valve: Setting value mm: 2,3...2,7 1st speed 1/min: 400 Supply-pump pressure:

B20

```
: 41...83
cm3/10s: (26....98)
1/min: 1100
Oveflow
 quantity
2nd speed
                     : 55...138
Over flow
 quantity cm3/10s: (40...153)
Delivery-quant. and breakaway char.:
1st speed
               1/min: 1230
Del.quantity cm3/: -
1000H.: 0...2,0
3rd speed
                1/min: 1200
Del.quantity cm3/: -
1000H.: 0...15,0
4th speed
                1/min: 1160
Del.quantity cm3/: -
1000H.: 0...15,0
5th speed
                1/min: 1120
Del.quantity cm3/: -
1000H.: (50,0...60,0)
6th speed 1/min: 1100
Del.quantity cm3/: 64,5...67,5
1000H.: (63,0...69,0)
                1/min: 900
7th speed
Del.quantity cm3/: -
1000H.: (68,0...74,0)
                1/min: 750
8th speed
                cm3/: 70,5...74,5
Del.quantity
                1000H: (68,8...76,2)
                1/min: 400
9th speed
Del.quantity cm3/: 63,5...67,5
                1000H: (61,8...69,2)
Zero delivery (stop):
Mech. shutoff:
               1/min: 1100
Speed
Del.quantity cm3/: - 1000H.
Electr. shutoff:
               1/min: 1100
Speed
ELAB
                 volt: -
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
                1/min: 350
Del.quantity cm3/: 17.0..23.0
1000H.: (15.0..25.0)
2nd speed 1/min: 375
Del.quantity cms/: -
1000H.: (6,0...16,0)
3rd speed
               1/min: 450
Del.quantity cm3/: -
1000H.: 0...4,0
Automatic starting fuel delivery:
1st speed
               1/min: 130
```

B21

```
Del.quantity cm3/: -
              1000H: 97.0
 ind.
2nd speed
             1/min: 200
Del.quantity cm3/: -
              1000H: 85,0
Shutoff electromagnet:
Cut-in
                   : 10,0
 min. voltage
                   : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
              mm
KF
                     5,1...5,4
              mm
                   : 1,4...1,6
MS
              mm
                   : 3,4
: 20,2...22,2
SVS max.
              mm
XK
              mm
                   : 12,5...15,9
XL
              mm
```

Note inst. in remarks column

: CUM 3.9 A6 Test sheet : 1.10.86 Edition replaces : 1.85 Calibrating oil : ISO-4113

Injection pump : VE 4/12F1050 R123-6
Type number : 0 460 424 012 : 0 460 424 012

Type number

Customer-specific information Customer : CUMMINS

: 4 BT-390 IND. Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder : 1 688 901 016 assembly `

Opening | bar : 207...210 pressure

Perforated-plate diameter mm : 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke

e mm: 0,3 (from BDC): +-0,02,(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Setting value mm: 2,3...2,7

Supply-pump pressure:

1/min: 900 Speed

Setting value bar: 4,5...5,1

Full-load del. w/out charge press.:	
I det toda det. Wode endige press.	2nd speed 1/min: 1050 Overflow : 55138
Speed 1/min: 900 Del.quantity cm3/	quantity cm3/10s: (40153
10004 6/ 5 65 5	Dalivanus quant and bacokautau abon t
1000H.: 64,565,5	Delivery-quant. and breakaway char.:
Dispersion cm3/: 4,0	1st speed 1/min: 1160
1000H.: (4,5)	Dol guantity and/1 -
10001 (4,2)	Del.quantity cm3/: -
)	1000H.: 01 ₅
Low-idle speed regulation:	2nd speed 1/min: 1110
Low rate speed regulation.	
į į	Del.quantity cm3/: -
Speed 1/min: 420	1000H.: (30,040,0)
	7-11 4/-1- 4000
Del.quantity cm3/	3rd speed 1/min: 1050
1000H.: 18,524,5	Del.quantity cm3/: 59,562,5
	10000 . (60 0 . 4/ 0)
Dispersion cm3/: 3,5	1000H.: (58,064,0)
1000H.: (4,5)	4th speed 1/min: 900
Full-load speed regulation:	Del.quantity cm3/: -
4	1000H.: (62,068,0)
1/min 1110	5th second 1/min 750
Speed 1/min: 1110	5th speed 1/min: 750
Del.quantity cm3/	Del.quantity cm3/: 64,068,0_
10004 72 0 70 0	10004 /47 7 40 71
1000H: 32,038,0	1000H.: (63,368,7)
1	6th speed 1/min: 500
Start:	Del quentity om7/ 60 0 6/ 0
scar c:	Del.quantity cm3/: 60,064,0_
4 · · · · · · · · · · · · · · · · · · ·	1000H.: (59,364,7)
Speed 1/min: 100	
	7 111 ()
Del.quantity mind.	Zero delivery (stop):
cm3/1000H.: 97,0	•
Cm37 1300111. 71 30	Mark alaskaff.
1	Mech. shutoff:
Inspection-pump test specifications	Speed 1/min: -
Test specifications in parentheses	Del.quantity cm3/: -
1	1000H.
i i	
1	
Timing-device characteristic:	Electr. shutoff:
	Speed 1/min: 375
l	
1st speed 1/min: 750	Del.quantity cm3/: -
TD travel mm: 1,11,9	1000H.
	100011.
mm: (0,82)	
2nd speed 1/min: 900	Idle delivery:
	rate detivory.
TD travel mm: -	
mm: (1,83,2)	1st speed 1/min: 420
3rd speed 1/min: 1050	Dal.quantity cm3/: -
TD travel mm: 3,24,0	1000H.: (16,526,5)
	20 d accord 4/min 500
mm: $(2,94,3)$	2nd speed 1/min: 500
	Not accomplished and 7/4
1	veladuantity cms/: -
Comply and an appropriate in the state of th	Del.quantity cm3/: -
Supply-pump pressure characteristic:	1000H.: 01,5
Supply-pump pressure characteristic:	1000H.: 01,5
	1000H.: 01,5
1st speed 1/min: 500	1000H.: 01,5 Automatic starting fuel delivery:
1st speed 1/min: 500	1000H.: 01,5
1st speed 1/min: 500 Supply-pump	1000H.: 01,5 Automatic starting fuel delivery:
1st speed 1/min: 500 Supply-pump pressure bar: 2,83,4	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130
1st speed 1/min: 500 Supply-pump pressure bar: 2,83,4	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -
1st speed 1/min: 500 Supply-pump pressure bar: 2,83,4 2nd speed 1/min: 750	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: -
1st speed 1/min: 500 Supply-pump pressure bar: 2,83,4 2nd speed 1/min: 750 Supply-pump	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130
1st speed 1/min: 500 Supply-pump pressure bar: 2,83,4 2nd speed 1/min: 750	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: -
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: -
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0
1st speed 1/min: 500 Supply-pump pressure bar: 2,83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3,84,4 3rd speed 1/min: 1050 Supply-pump	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: -
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5 Overflow quantity at overflow valve:	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0 Shutoff electromagnet:
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5 Overflow quantity at overflow valve:	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5 Overflow quantity at overflow valve: 1st speed 1/min: 500	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0 Shutoff electromagnet: Cut-in
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5 Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 55138	Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0 Shutoff electromagnet: Cut-in min. voltage : 10,0
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5 Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 55138	Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0 Shutoff electromagnet: Cut-in min. voltage : 10,0
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5 Overflow quantity at overflow valve: 1st speed 1/min: 500	1000H.: 01,5 Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0 Shutoff electromagnet: Cut-in
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5 Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 55138 quantity cm3/10s: (40153)	Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0 Shutoff electromagnet: Cut-in min. voltage : 10,0
1st speed 1/min: 500 Supply-pump pressure bar: 2.83,4 2nd speed 1/min: 750 Supply-pump pressure bar: 3.84,4 3rd speed 1/min: 1050 Supply-pump pressure bar: 4,95,5 Overflow quantity at overflow valve: 1st speed 1/min: 500 Oveflow : 55138	Automatic starting fuel delivery: 1st speed 1/min: 130 Del.quantity cm3/: - ind. 1000H: 97,0 2nd speed 1/min: 200 Del.quantity cm3/: - ax. 1000H: 85,0 Shutoff electromagnet: Cut-in min. voltage : 10,0

Mounting and assembly dimensions:

Designation K KF MS SVS max. XK XL mm : -mm : 5,2-5,5 mm : 1,4-1,65 mm : 4,2 mm : 20,2-22,2 mm : 11,7-15,0

Note inst. in remarks column

Test sheet : CUM 3,9 E Edition replaces : 11.12.86

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1100 R226 Type number : 0 460 424 022

Customer-specific information Customer : CUMMINS

: 4BT-3.9 Engine

k: 70 Power 1/mi: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening |

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2,3...2,7

```
1/min: 500
Speed
               1/min: 900
                                                          1st speed
                                                                              : 41...83
Setting value bar: 4,1...4,7
                                                          Oveflow
                                                                      cm3/10s: (26...98)
1/min: 1100
                                                           quantity
Full-load del. w/out charge press.:
                                                          2nd speed
                                                          Overflow
                                                                              : 55...138
                                                           quantity cm3/10s: (40...153)
Speed
              1/min : 900
Deliquantity cm3/
              1000H.: 65,5...66,5
                                                          Delivery-quant, and breakaway char.:
                cm3/: 4,0
                                                                        1/min: 1250
                                                          1st speed
Dispersion
                                                         Del.quantity cm3/: -
1000H.: 0...2,0
              1000H.: (4,5)
Low-idle speed regulation:
                                                                         1/min: 1220
                                                          3rd speed
                                                         Del.quantity cm3/: -
1000H.: 0...15,0
Speed
               1/min: 375
                                                                         1/min: 1180
Del.quantity cm3/
                                                          4th speed
                                                         Del.quantity cm3/: -
1000H:: 0...15,0
              1000H.: 8,0...14,0
                cm3/: 5,5
Dispersion
                                                         5th speed 1/min: 1000H:: (51,0...61,0)
6th speed 1/min: 1100
                                                                         1/min: 1150
              1000H.: -
                                                          5th speed
Full-load speed regulation:
Speed
               1/min: 1150
                                                         Del.quantity cm3/: 63,0...68,0)
Deliquantity cm3/
               1000H: 53,0...59,0
                                                                         1/min: 900
                                                          7th speed
                                                         The speed Del.quantity cm3/: - 1000H.: (63,0...69,0)

R+h speed 1/min: 750
Start:
Speed
               1/min: 100
                                                         Del.quantity cm3/: 68.0...72.0
1000H: (66.3...73.7)
9th speed 1/min: 500
Del.quantity cm3/: 67.0...75.0
Del.quantity mind.
         cm3/1000H.: 70,0
Inspection-pump test specifications
                                                                         1000H: (67,3...74,7)
Test specifications in parentheses
                                                         Zero delivery (stop):
Timing-device characteristic:
                                                         Mech. shutoff:
                                                                        1/min: -
1st speed
               1/min: 750
                                                         Speed
                  mm: 1,3...2,1
mm: (1,0...2,4)
                                                         Del.quantity cm3/: - 1000H.
TD travel
               1/min: 900
2nd speed
TD travel
                                                         Electr. shutoff:
                  man: -
                  mm: (1,8...3,2)
                                                         Speed
                                                                        1/min: 375
                                                         Del.quantity cm3/: - 1000H.
               1/min: 1100
3rd speed
TD travel
                  mm: 3,1...3,9
                  mm: (2,8...4,2)
                                                         Idle delivery:
Supply-pump pressure characteristic:
                                                         1st speed
                                                                        1/min: 300
                                                         Del.quantity cm3/: 35,0..47,0
1000H.: (36,0..46,0)
1st speed
               1/min: 200
Supply-pump
                                                                        1/min: 375
                 bar: 0,8...1,4
pressure
                                                         2nd speed
                                                         Del.quantity cm3/: -
1000H.: (6,0...16,0)
3rd speed 1/min: 500
               1/min: 500
2nd speed
Supply-pump
                 bar: 2,3...2,9
pressure
                                                         Del.quantity cm3/: -
1000H.: 0...4<sub>2</sub>0
               1/min: 1700
3rd speed
Supply-pump
                 bar: 4,9...5,5
pressure
                                                         Automatic starting fuel delivery:
Overflow quantity at overflow valve:
                                                                        1/min: 130
                                                         1st speed
```

Del.quantity cm3/: - 1000H: 80,0 ind.

2nd speed 1/min: 240
Del.quantity cm3/: ax. 1000H: 80,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation K KF mm mm : 5,1...5,4 mm : 1,2..1,45 mm : 4,2 mm : 20,2...22,2 mm : 11,0...14,4 MS SVS max. ΧK XL

Note inst. in remarks column

Test sheet : CUM 3.9 E1 Edition : 11.12.86 replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1150 R226-1 Type number : 0 460 424 023

Customer-specific information Customer : CUMMINS

Engine : 4BT-3.9

k: 53 1/mi: 2300 Power Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2,0...2,4

```
1/min: 500
Speed
             1/min: 900
                                                        1st speed
Setting value bar: 4,2...4,8
                                                        Oveflow
                                                                             : 41...83
                                                          quantity cm3/10s: (26...98) and speed 1/min: 1150
Full-load det. w/out charge press.:
                                                         2nd speed
                                                        Overflow |
                                                                             : 55...138
             1/min: 900
Speed
                                                          quantity cm3/10s: (40...153)
Del.quantity cm3/
              1000H.: 67,0...68,0
                                                        Delivery-quant. and breakaway char.:
               cm3/: 4,0
                                                        1st speed
Dispersion
                                                                      1/min: 1300
                                                        Del.quantity cm3/: -
1000H.: 0...2,0
              1000H.: (4,5)
Low-idle speed regulation:
                                                                        1/min: 1240
                                                        3rd speed
                                                        Del.quantity cm3/: 13.0...25.0
1000H.: (14.0...24.0)
               1/min: 375
                                                                        1/min: 1190
                                                        4th speed
Del.quantity cm3/
                                                        Del.quantity cm3/: -
1000H.: (45,0...55,0)
              1000H.: 8,0...14,0
Dispersion
                cm3/: 5,5
                                                                       1/min: 1150
              1000H.: -
                                                         5th speed
                                                        Del.quantity cm3/: 63.5...66.5
1000H.: (62.0...68.0)
Full-load speed regulation:
                                                                        1/min: 900
Speed
              1/min: 1190
                                                        6th speed
                                                        Del.quantity cm3/: -
1000H.: (64,5...70,5)
7th speed 1/min: 750
Deliquantity cm3/
               1000H: 47,0...53,0
                                                        Del.quantity cm3/: 69,5...73,5
1000H.: (67,8...75,2)
Start:
                                                                        1/min: 500
Speed
               1/min: 100
                                                        8th speed
                                                        Del.quantity cm3/: 68.0...76.0
1000H: (68.3...75.7)
Del.quantity mind.
         cm3/1000H.: 70,0
                                                        Zero delivery (stop):
Inspection-pump test specifications.
Test specifications in parentheses
                                                        Mech. shutoff:
                                                        Speed
                                                                       1/min: -
                                                        Del.quantity cm3/: - 1000H.
Timing-device characteristic:
1st speed
               1/min: 750
TD travel
                  mm: 0,8...1,6
                                                        Electr. shutoff:
                  mm: (0,5...1,9)
                                                        Speed
                                                                      1/min: 375
                                                        Del.quantity cm3/: - 1000H.
               1/min: 900
2nd speed
TD travel
                  mm: -
               mm: (1,5...2,9)
1/min: 1150
3rd speed
                                                        Idle delivery:
                  mm: 3,2...4,0
TD travel
                                                        1st speed 1/min: 300
Del.quantity cm3/: 32,0..44,0
1000H.: (33,0..43,0)
2nd speed 1/min: 375
                  mm: (2,9...4,3)
Supply-pump pressure characteristic:
                                                        Del.quantity cm3/: -
1000H.: (6,0...16,0)
1st speed
               1/min: 200
Supply-pump
                 bar: 0,9...1,5
                                                                       1/min: 500
pressure
                                                        3rd speed
                                                        Del.quantity cm3/: -
1000H.: 0...4,0
               1/min: 500
2nd speed
Supply-pump
              bar: 2,5...3,1
1/min: 1150
pressure
3rd speed
                                                        Automatic starting fuel delivery:
Supply-pump
                 bar: 5,2...5,8
                                                        1st speed
                                                                       1/min: 130
pressure
                                                        Del.quantity cm3/: -
                                                                       1000H: 80,0
Overflow quantity at overflow valve:
                                                         ind.
```

2nd speed 1/min: 240 Del.quantity cm3/: -ax. 1000H: 80,0

Shutoff electromægnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation K KF mm

MS SVS max.

mm : -mm : 5,1...5,4 mm : 1,2..1,45 mm : 4,2 mm : 18,8...20,8 mm : 11,7...15,1 ΧK XL

Note inst. in remarks column

Test sheet : CUM 3.9 E2 Edition : 11.12.86 replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R226-2 Type number : 0 460 424 024

Customer-specific information Customer : CUMMINS

Engine : 4BT 3.9

Power k: 55 1/mi: 2500 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 42...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900

Setting value mm: 2,0...2,4

```
1/min: 900
                                                                        1/min: 500
                                                         1st speed
Setting value bar: 4,6...5,2
                                                         Oveflow |
                                                                             : 41...83
                                                                     cm3/10s: (26...98)
1/min: 1250
                                                          quantity
                                                         2nd speed
Full-load det. W/out charge press.:
                                                                              : 55...138
                                                         Overflow
                                                          quantity cm3/10s: (40...153)
              1/min: 1100
Speed
Del.quantity cm3/
              1000H.: 65,5...66,5
                                                         Delivery-quant. and breakaway char.: 1st speed 1/min: 1400
                cm3/: 4,0
Dispersion
                                                         Del.quantity cm3/: -
1000H.: 0...2,0
              1000H.: (4,5)
                                                                        1/min: 1370
                                                         3rd speed
Low-idle speed regulation:
                                                         Del.quantity cm3/: -
1000H.: 0...15,0
               1/min: 335
Speed
Deliquantity cm3/
                                                                        1/min: 1330
                                                         4th speed
                                                        Del.quantity cm3/: -
1000H.: 0...15,0
              1000H.: 8,0...14,0
                cm3/: 5,5
Dispersion
              1000H.: -
                                                                        1/min: 1290
                                                         5th speed
                                                        Del.quantity cm3/: -
1000H.: (40,0...50,0)
6th speed 1/min: 1250
Full-load speed regulation:
Speed
               1/min: 1290
                                                        Del.quantity cm3/: 63.0...66.0
1000H.: (61.5...67.5)
7th speed 1/min: 1100
Del.quantity cm3/
               1000H: 42,0...48,0
                                                         7th speed
                                                        Del.quantity cm3/: -
1000H.: (63,0...69,0)
Start:
                                                                        1/min: 750
Speed
               1/min: 100
                                                         8th speed
                                                        Del.quantity cm3/: 69,0...73,0
1000H: (67,3...74,7)
Del.quantity mind.
         cm3/1000H.: 70,0
                                                        9th speed 1/min: 500
Del.quantity cm3/: 70,0...78,0
Inspection-pump test specifications
Test specifications in parentheses
                                                                        1000H: (70,3...73,7)
                                                         Zero delivery (stop):
Timing-device characteristic:
                                                        Mech. shutoff:
1st speed
               1/min: 750
                                                         Speed
                                                                        1/min: -
                                                        Del.quantity cm3/
1000H.
                  mm: 0.8...1.6
mm: (0.5...1.9)
TD travel
                                                                        cm3/: -
2nd speed
               1/min: 900
TD travel
                  mm: -
                                                         Electr. shutoff:
               mm: (1,5...2,9)
1/min: 1100
                                                                        1/min: 335
                                                         Speed
                                                        Del.quantity cm3/: - 1000H.
3rd speed
                  mm: 2,9...3,7
TD travel
                  mm: (2,6...4,0)
                                                         Idle delivery:
Supply-pump pressure characteristic:
                                                                        1/min: 335
                                                         1st speed
                                                        Del.quantity cm3/: -
1000H.: (6,0...16,0)
1st speed
               1/min: 200
Supply-pump
               bar: 1,3...1,9
1/min: 750
                                                                        1/min: 500
                                                         2nd speed
 pressure
                                                        Del.quantity cm3/: -
1000H.: 0...4,0
2nd speed
Supply-pump
pressure
                 bar: 3,9...4,5
               1/min: 1100
3rd speed
                                                        Automatic starting fuel delivery:
Supply-pump
pressure
                 bar: 2,9...3,7
                                                         1st speed
                                                                        1/min: 130
                                                        Del.quantity cm3/: -
                                                                        1000H: 75,0
Overflow quantity at overflow valve:
                                                          ind.
```

2nd speed 1/min: 300 Del.quantity cm3/: ax. 1000H: 75,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,1...5,4
MS mm : 1,2..1,45
SVS max. mm : 4,2
XK mm : 18,8...20,8
XL mm : 11,5...14,9

Note inst. in remarks column

Test sheet : CUM 3.9 D2 Edition : 11.12.86 Edition replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R231 Type number : 0 460 424 028

Customer-specific information : CUMMINS Customer

: 4BTA-3.9 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening -

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3 (from BDC): +-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 850 Charge press. hPa: 1000 Setting value mm: 4,0...4,4

Supply-pump pressure:

Speed 1/min: 850 Charge press. hPa: 1000

```
Setting value bar: 5,6...6,2
                                                       Supply-pump
                                                                     bar: 4,0...4,6
1/min: 1100
                                                        pressure
Full-load del. with charge press.:
                                                       2nd speed
                                                                      hPa: 1000
                                                       Charge press.
                                                       Supply-pump
               1/min: 850
Speed
Charge press. hPa: 1000
                                                                       bar: 6,7...7,3
                                                        pressure
Del.quantity cm3/
1000H.: 85,5...86,5
                                                       Overflow quantity at overflow valve:
              cm3/:4,0
Dispersion
             1000H : (4,5)
                                                                     1/min: 500
                                                       1st speed
                                                       Charge press. hPa: -
Full-load del. w/out charge press.:
                                                       Oveflow
                                                                           : 41...83
                                                        quantity cm3/10s: (26...98)
             1/min : 500
                                                       2nd speed 1/min: 1250
                                                       Charge press. hPa: 1000
Del quantity cm3/
             5...64 : 1000H.
                                                       Cverflow
                                                                          : 55...138
                                                        quantity cm3/10s: (40...153)
Low-idle speed regulation:
                                                      Delivery-quant. and breakaway char.: 1st speed 1/min: 700
                                                       1st speed
Speed
              1/min: 365
Charge press. hPa: -
                                                       Charge-air pressure-setting
Del.quantity cm3/
1000H.: 8,0...14,0
                                                      point hPa: 350
Del.quantity cm3/: 79,5...80,5
                                                                    1000H.: (77,0...83,0)
Full-load speed regulation:
                                                                     1/min: 1420
                                                       2nd speed
                                                      Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...2,0
               1/min: 1310
Speed
Charge press. hPa: 1000
Deliquantity cm3/
                                                      3rd speed 1/min: 1400
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...15,0
              1000H: 61,0...67,0
Start:
                                                                     1/min: 1360
Speed
              1/min: 100
                                                       4th speed
                                                      Del.quantity mind.
         cm3/1000H.: 60,0
Inspection-pump test specifications
Test specifications in parentheses
Timing-device characteristic:
                                                      1/min: 500
1st speed
Charge press. hPa: 1000
                  mm: 1,8...2,6
mm: (1,5...2,9)
TD travel
              1/min: 850
2nd speed
Charge press. hPa: 1000
TD travel
                  mm: -
                                                      Charge press. hPa: 1000
                  mm: (3,5...4,9)
                                                      Del.quantity cm3/: -
1000H: (83,0...89,0)
9th speed 1/min: 500
Charge press. hPa: 1000
Del.quantity cm3/: 91,0...99,0
1000H: -
              1/min: 1100
3rd speed
Charge press. hPa: 1000
                 mm: 4,9...5,7
TD travel
                  mm: (4,6...6,0)
Supply-pump pressure characteristic:
                                                                     1/min: 500
                                                       10th speed
              1/min: 500
                                                      Charge press. hPa: -
1st speed
                                                      Del.quantity cm3/: -
Charge press. hPa: 1000
                                                                     1000H: (61,0...67,0)
```

```
Zero delivery (stop):
Mech. shutoff:
Speed
             1/min: -
Del.quantity cm3/: - 1000H.
Electr. shutoff:
              1/min: 365
Speed
Del.quantity cm3/: ~ 1000H.
Idle delivery:
1st speed
              1/min: 365
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed
              1/min: 450
Del.quantity cm3/: -
1000H.: 0...4,0
Automatic starting fuel delivery:
            1/min: 130
1st speed
Del.quantity cm3/: -
              1000H: 60,0
 ind.
2nd speed
            1/min: 230
Del.quantity cm3/: -
              1000H: 60,0
Shutoff electromagnet:
Cut-in
                : 10,0
 min. voltage
Rated voltage
                   : 12,0
Mounting and assembly dimensions:
Designation
K
               mm
                  5,1...5,4
: 1,1..1,35
: 2,6
KF
               mm
MS
               mm
SVS max.
               mm
                  : 20,2...22,2
XK
               mm
XL
               mm
                  : 13,1...16,6
```

Note inst. in remarks column

Test sheet : CUM 3,9 D3 Edition : 11.12.86 replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1250 R239-1 Type number : 0 460 424 031

Customer-specific information Customer : CUMMINS

Engine : 4BT-3.9 AUTO

k: 77 Power Speed 1/mi: 2500

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed Charge press. hPa: 1000 Setting value mm: 0,8...1,2

Supply-pump pressure characteristic: 1/min: 1100 Speed Charge press. hPa: 1000 1/min: 500 1st speed hPa: 1000 Setting value bar: 5,7...6,3 Charge press. Supply-pump bar: 2,9...3,5 1/min: 850 Full-load del. with charge press.: pressure 2nd speed hPa: 1000 Speed 1/min: 850 Charge press. Charge press. hPa: 1000 Supply-pump bar: 4,6.25,2 1/min: 1250 Del.quantity cm3/ 1000H.: 82,0...83,0 pressure 3rd speed Charge press. hPa: 1000 cm3/: 4.0Dispersion 1000H : (4,5) Supply-pump bar: 6,3...6,9 pressure Full-load del. w/out charge press.: Overflow quantity at overflow valve: Speed 1/min : 500 Del.quantity cm3/ 1000H.: 54,0...55,0 1/min: 500 1st speed Charge press. hPa: Oveflow : 41...83 quantity cm3/10s: (26...98) Low-idle speed regulation: 2nd speed 1/min: 1250 Charge press. hPa: 1000 Overflow: 55... Speed 1/min: 375 : 55...138 Charge press. hPa: -Del.quantity cm3/ 1000H.: 13,5...19,5 hishersion cm3/: 5,5 quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 700 1000H.: Full-load speed regulation: Charge-air pressure-setting point hPa: 600

Del.quantity cm3/: 72.0...73.0

1000H.: (69.5...75.5)

2nd speed 1/min: 1520 1/min: 1400 Speed Charge press. hPa: 1000 Deliquantity cm3/ 2nd speed 1000H: 59,5...65,5 Charge press. hPa: 1000 Del.quantity cm3/: -1000H.: 0...2,0 Start: 3rd speed 1/min: 1500 Charge press. hPa: 1000 Del.quantity cm3/: -1000H.: 0...15,0 Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 60,0 1/min: 1460 4th speed Charge press. hPa: 1000 Inspection-pump test specifications Del.quantity cm3/: -1000H.: 0...15,0 Test specifications in parentheses 5th speed 1/min: 1400 Charge press. hPa: 1000 Del.quantity cm3/: -1000H.: (57,5...67,5) 6th speed 1/min: 1250 Timing-device characteristic: 1/min: 1050 1st speed Charge press. hPa: 1000 Charge press. hPa: 1000
Del.quantity cm3/: 75.0...78.0
1000H.: (73.5...79.5)
7th speed 1/min: 1100 TD travel mm: 0,3...1,1 mm: (0...1,4)1/min: 1100 2nd speed Charge press. hPa: 1000 Charge press. hPa: 1000
Del.quantity cm3/: 77.0...80.0
1000H.: (75.5...81.5)
8th speed 1/min: 850 TD travel mm: mm: (0,3...1,7) 1/min: 1250 3rd speed Charge press. hPa: 1000 Charge press. hPa: 1000 TD travel mm: 1,5...2,3 Del.quantity cm3/: mm: (1,2,...2,6)1000H: (79,5...85,5)

```
1/min: 500
9th speed
Charge press. hPa: 1000
              cm3/: 101,0...109,0
1000H: (101,3...108,7)
Del.quantity
              1/min: 500
10th speed
Charge press. hPa: -
Del.quantity cm3/: -
              1000H: (51,5...57,5)
Zero delivery (stop):
Mech. shutoff:
Speed
              1/min: -
Del.quantity cm3/: - 1000H.
Electr. shutoff:
              1/min: 375
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
              1/min: 375
1st speed
Del.quantity cm3/: -
             1000H.: (11,5..21,5)
2nd speed
              1/min: 450
Del.quantity cm3/: -
1000H.: 0...4,0
Automatic starting fuel delivery:
              1/min: 340
1st speed
Del.quantity cm3/: -
              1000H: 75,0
 ind.
              1/min: 440
2nd speed
Del.quantity cm3/:
              1000H: 80,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
                    : 10,0
Rated voltage
                    : 12,0
Mounting and assembly dimensions:
Designation
               mm
KF
                    : K-0T
               mm
                    : 1,1..1,35
: 3,8
MS
               mm
SVS max.
               mm
                   : 20,2...22,2
XK
               mm
XL
                   8, 15, 4. . . 15, 8
               mm
Remarks:
Correction at adjusting nut (46)
```

Note inst. in remarks column

Test sheet : CUM 3.9 D1 Edition : 11.12.86 replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 4/12F1050 R230-3 Type number : 0 460 424 033

Customer-specific information Customer : CUMMINS

Engine : 4BTA-3.9

k: 79 Power Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value mm: 3,4...3,8

1	1st speed 1/min: 500
Speed 1/min: 750	Charge press. hPa: 1000
Charge press. hPa: 1000	Supply-pump pressure bar: 3,94,5 2nd speed 1/min: 1050
Setting value bar: 5,05,6	pressure bar: 3,94,5
	2nd speed 1/min: 1050
Full-load del. with charge press.:	charge press. hra: 1000
	Supply-pump
Speed 1/min: 750	pressure bar: 6,36,9
Charge press. hPa: 1000	0
Del.quantity cm3/	Overflow quantity at overflow valve:
1000H.: 89,590,5 Dispersion cm3/: 4,0	1st speed 1/min: 500
1000H : (4,5)	Charge press. hPa: -
100011 . (4)2)	Oveflow : 4183
Full-load del. w/out charge press.:	quantity cm3/10s: (2698)
1	2nd speed 1/min: 1050
Speed 1/min: 500	Charge press. hPa: 1000
Del.quantity cm3/	Overflow : 55138
1000H.: 63,564,5	quantity cm3/10s: (40153)
	Delivery was to and because at an a
Low-idle speed regulation:	Delivery-quant. and breakaway char.:
Speed 1/min: 375	1st speed 1/min: 700
Charge press. hPa: -	Charge-air pressure-setting point hPa: 350
Del.quantity cm3/	Del.quantity cm3/: 79,580,5
1000H.: 8,014,0	1000H.: (77,083,0)
full-load speed regulation:	2nd speed 1/min: 1180
	Charge press. hPa: 1000
Speed 1/min: 1100 !	Charge press. hPa: 1000 Del.quantity cm3/: - 1000H.: 02,0
Charge press. hPa: 1000	1000H.: 02,0
Del.quantity cm3/	3rd speed 1/min: 1160
1000H: 59,065,0	Charge press. hPa: 1000
Start:	Del.quantity cm3/: - 1000H.: 015,0
Scar C.	4th speed 1/min: 1120
Speed 1/min: 100	Charge press. hPa: 1000
Del.quantity mind.	Del.quantity cm3/: -
cm3/1000H.: 60,0	1000H.: 015,0
1	5th speed 1/min: 1100
Inspection-pump test specifications	Charge press. hPa: 1000
Test specifications in parentheses	Deliquantity cm3/: -
	1000H.: (57,0,67,0)
Timinom daviga changetanistic:	6th speed 1/min: 1050
Timing-device characteristic:	Charge press. hPa: 1000 Del.quantity cm3/: 76,579,5
1st speed 1/min: 500	1000H.: (75,081,0)
Charge press. hPa: 1000	7th speed 1/min: 900
TD travel mm: 1,72,5	Charge press. hPa: 1000
mm: (1,42,8)	Del.quantity cm3/: 82,085,0
2nd speed 1/min: 750	1000H.: (80,586,5)
Charge press. hPa: 1000	8th speed 1/min: 750
TD travel mm: -	Charge press. hPa: 1000
mm: (2,94,3)	Del.quantity cm3/: -
3rd speed 1/min: 1050	1000H: (87,093,0) 9th speed 1/min: 500
Charge press. hPa: 1000 I TD travel mm: 4,75,5	Charge press. hPa: 1000
mm: (4,45,8)	Del.quantity cm3/: 91,099,0
	1000H: -
Supply-pump pressure characteristic:	10th speed 1/min: 500
1	Charge press. hPa: -
C13	

```
Del.quantity cm3/: -
              1000H: (61,0...67,0)
Zero delivery (stop):
Mech. shutoff:
              1/min: -
Speed
Del.quantity cm3/: - 1000H.
Electr. shutoff:
              1/min: 375
Speed
Del.quantity cm3/: - 1000H.
                             Idle delivery:
              1/min: 375
1st speed
Del.quantity cm3/: -
1000H.: (6,0...16,0)
              1/min: 450
2nd speed
Del.quantity cm3/: -
1000H.: 0...4,0
Automatic starting fuel delivery:
1st speed
              1/min: 130
Del.quantity cm3/: -
 ind.
              1000H: 60,0
              1/min: 230
2nd speed
Del.quantity cm3/: -
              1000H: 60,0
 ax.
Shutoff electromagnet:
Cut-in
                   : 10,0
min. voltage
                   : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
               mm
                   : 5,1...5,4
: 1,1..1,35
: 2,2
KF
               mm
MS
               mm
SVS max.
               mm
                   : 20,2...22,2
XK
               mm
                   : 11,9...15,3
XL
               mm
Remarks:
Correction at adjusting nut (46)
```

Speed 1/min: 750 Setting value bar: 4,2...4,8 BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Full-load del. w/out charge press.: : CUM 5,9 D1 1/min: 900 Test sheet Speed Del.quantity cm3/ 1000H.: 83.0...84.0 Dispersion cm3/: 4.0 : 12.12.86 Edition : 4.85 replaces : ISO 4113 Calibrating oil 1000H.: (4,5) : VE 6/12F1050 R159-4 Injection pump : 0 460 426 044 Low-idle speed regulation: Type number Customer-specific information 1/min: 375 Speed Del.quantity cm3/ 1000H.: 22,0...28,0 Customer : CUMMINS : 6BT-5.9 Full-load speed regulation: Engine k: 76 Power Speed 1/min: 1125 Del.quantity cm3/ Speed 1/mi: 2100 1000H: 36,0...44,0 TEST BENCH REQUIREMENTS Start: Calibrating-oil return temp. OC 1/min: 100 Speed with thermometer : 40...48 Del.quantity mind. cm3/1000H.: 97.0 electronically : 42...50 Inspection-pump test specifications Inlet press., bar : 0.2 Test specifications in parentheses Calibrating nozzle-holder : 1 688 901 016 assembly Timing-device characteristic: Opening 1/min: 500 mm: 1,8...2,6 pressure bar : 207...210 1st speed TD travel mm: (1,5...2,9) 1/min: 750 Perforated-plate diameter mm: 0.5 2nd speed TD travel mm: mm: (3,1...4,5)Test inj. tubing : 1 680 750 017 1/min: 900 3rd speed ID travel mm: 4,6...5,4 mm: (4,3...5,7)Outside diameter : 6 x Wall thickness : 2 mm : 840 Supply-pump pressure characteristic: x Length 1/min: 500 Start of delivery 1st speed mm : 0.3Supply-pump Preströke (from BDC): +-0.02(0.04)bar: 3,0...3,6 pressure 1/min: 900 2nd speed Injection-pump setting values Supply-pump Test specifications in parentheses pressure bar: 4,7...5,3 Overflow quantity at overflow valve: Timing-device travel: 1/min: 500 Speed 1/min: 750 1st speed : 41...83 Setting value mm: 3,6...4,0 Oveflow quantity cm3/10s: (26...98) and speed 1/min: 1050 2nd speed Supply-pump pressure:

C15

```
Overflow
                      : 55...138
 quantity cm3/10s: (40...153)
Delivery-quant. and breakaway char.:
1st speed
               1/min: 1175
Del.quantity cm3/: -
1000H.: 0...1,5
3rd speed 1/min: 1125
Del.quantity cm3/: 36.0...44.0
1000H.: (35.0...45.0)
4th speed
                1/min: 1050
Del.quantity cm3/: 78,5...81,5
1000H.: (77,0...83,0)
                1/min: 900
5th speed
Del.quantity cm3/: -
1000H.: (80,5...86,5)
6th speed 1/min: 750
1/min: 500
7th speed
Del.quantity cm3/: 84,0...88,0
1000H.: (82,3...89,7)
Zero delivery (stop):
Mech. shutoff:
                1/min: -
Speed
Del.quantity cm3/: - 1000H.
Electr. shutoff:
               1/min: 375
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
                1/min: 300
Del.quantity cm3/: 45,0..53,0
1000H.: (44,0..54,0)
2nd speed 1/min: 375
2nd speed
Del.quantity cm3/: -
1000H.: (20,0..30,0)
               1/min: 450
3rd speed
Del.quantity cm3/: -
1000H.: 0...1,5
Automatic starting fuel delivery:
                1/min: 130
1st speed
Del.quantity cm3/: -
                1000H: 97,0
 ind.
2nd speed
                1/min: 200
Del.quantity cm3/: -
                1000H: 85,0
```

Cut-in min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm : KF mm : 5,2...5,5
MS mm : 1,4...1,6
SVS max. mm : 0,8
XK mm : 20,2...22,2
XL mm : 10,7...14,1

Remarks:

Shutoff electromagnet:

Note inst. in remarks column

Test sheet : CUM 5.9 L Edition : 10.12.86 replaces : 1.85 Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R173-3 Type number : 0 460 426 058

: 0 460 426 058 Type number

Customer-specific information : CUMMINS Customer

: 6BTA 5,9 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 016 assembly

Opening

pressure bar : 207...210

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Charge press. hPa: 750 Setting value mm: 2,0...2,4

Supply-pump pressure:

1/min: 900 Charge press. hPa: 750

```
Charge press. hPa: 750
Setting value bar: 4,1...4,7
                                                          Supply-pump
                                                                         bar: 1,1...1,7
1/min: 750
Full-load del. with charge press.:
                                                           pressure
                                                          2nd speed
Speed 1/min: 750
Charge press. hPa: 750
                                                                           hPa: 750
                                                          Charge press.
                                                          Supply-pump
                                                                           bar: 3,6...4,2
Del.quantity
                cm3/
                                                           pressure
              1000H.: 91,0...92,0
                                                          3rd speed
                                                                         1/min: 1050
               cm3/: 4.0
                                                                           hPa: 750
Dispersion
                                                          Charge press.
              1000H : (4,5)
                                                          Supply-pump
                                                           pressure
                                                                           bar: 4,8...4,7
Full-load del. w/out charge press.:
                                                          Overflow quantity at overflow valve:
              1/min : 500
Speed
                                                                         1/min: 500
: 55...138
Deliquantity cm3/
                                                          1st speed
              1000H.: 66,0...67,0
                                                          Oveflow
                                                                       cm3/10s: (40...153)
                                                           quantity
Low-idle speed regulation:
                                                          2nd speed
                                                                         1/min: 1050
                                                          Overflow
                                                                               : 55...138
                                                           quantity cm3/10s: (40...153)
               1/min: 375
Speed
Charge press. hPa: -
                                                          Delivery-quant. and breakaway char.:
               cm3/
Del.quantity
              10GOH.: 20,5...26,5 cm3/: 3,5
                                                          1st speed
                                                                        1/min: 600
Dispersion
                                                          Charge-air pressure-setting
              1000H.: (4,5)
                                                           point
                                                                           hPa: 400
                                                          LDA stroke mm: 6.2
Del.quantity cm3/: 82,5...83,5
Full-load speed regulation:
                                                                        1000H.: (80,0...86,0)
               1/min: 1100
Speed
Charge press. hPa: 750
                                                                         1/min: 1170
                                                          2nd speed
                                                          Charge press. hPa: 750
Del.quantity cm3/: -
1000H:: 0...1,5
Del.quantity cm3/
               1000H: 64,5...70,5
Start:
                                                                         1/min: 1160
                                                          3rd speed
                                                          Charge press. hPa: 750
                                                          Del.quantity cm3/: -
1000H.: 0...15
Speed
               1/min: 100
Del.quantity mind.
         cm3/1000H.: 97,0
                                                                         1/min: 1120
                                                          4th speed
                                                          Charge press. hPa: 750
Del.quantity cm3/: -
1000H:: 0..15,0
Inspection-pump test specifications
Test specifications in parentheses
                                                                         1/min: 1100
                                                          5th speed
                                                          Charge press. hPa: 750
                                                          Del.quantity cm3/: -
1000H.: (62,5...72,5)
Timing-device characteristic:
                                                                         1/min: 1050
               1/min: 750
1st speed
                                                          6th speed
                                                          Charge press. hPa: 750
Del.quantity cm3/: 78,5...81,5
1000H.: (77,0...83,0)
                 hPa: 750
Charge press.
                   mm: 1,3...2,1
mm: (1,0...2,8)
TD travel
               1/min: 900
                                                          7th speed
                                                                         1/min: 900
2nd speed
                                                          Charge press. hPa: 750
Del.quantity cm3/: 85,5...88,5
1000H.: (84,0...90,0)
Charge press. hPa: 750
TD travel
                  mm:
               mm: (1,5...2,9)
1/min: 1050
                                                                         1/min: 750
3rd speed
                                                          8th speed
                                                         Charge press. hPa: 750
Del.quantity cm3/: -
1000H: (88,5...94,5)
9th speed 1/min: 500
                 hPa: 750
Charge press.
                  mm: 2,7...3,3
mm: (2,3...3,6)
TD travel
                                                          Charge press. hPa: 750
Supply-pump pressure characteristic:
                                                          Del.quantity cm3/: 102,0...106,0
                                                                         1000H: (100,3...107,7)
ist speed
               1/min: 200
C18
```

```
10th speed
              1/min: 500
Charge press. hPa: -
Del.quantity cm3/: -
              1000H: (63,5...69,5)
Zero delivery (stop):
Mech. shutoff:
Speed
              1/min: -
Deliquantity cm3/: - 1000H.
Electr. shutoff:
              1/min: 375
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
              1/min: 375
1st speed
Del.quantity cm3/: -
1000H.: (18,5..28,5)
2nd speed 1/min: 450
Del.quantity cm3/: -
1000H.: 0...1,5
Automatic starting fuel delivery:
             1/min: 130
1st speed
Del.quantity cm3/: -
              1000H: 85,0
 ind.
             1/min: 230
2nd speed
Del.quantity cm3/: -
              1000H: 85,0
Shutoff electromagnet:
Cut-in
                : 10,0
min. voltage
Rated voltage
                   : 12,0
Mounting and assembly dimensions:
Designation
               mm
                   5,2...5,5
: 1,4...1,6
: 1,2
KF
               mm
MS
               mm
SVS max.
               mm
Remarks:
Correction at adjusting nut (46)
```

```
BOSCH-INJ.-PUMP TEST SPECIFICATIONS
                                                  Speed
                                                              1/min: 750
                                                  Charge press. hPa: 800
Note inst. in remarks column
                                                  Setting value bar: 3,3...3,9
                 : CUM 5,9 L1
Test sheet
                                                  Full-load del. with charge press.:
Edition
                  : 10.12.86
replaces
                                                               1/min: 750
                                                  Speed
                                                  Charge press. hPa: 800
                  : ISO 4113
Calibrating oil
                                                  Del.quantity cm3/
1000H.: 82,5...83,5
Injection pump
                  : VE 6/12F1250 R173-4
Type number
                  : 0 460 426 060
                                                               cm3/:4.0
                                                  Dispersion
                                                              1000H : (4,5)
Customer-specific information
Customer
                  : CUMMINS
                                                  Full-load del. w/out charge press.:
Engine
                  : 6BTA-5,9
                                                  Speed
                                                              1/min : 500
                                                  Del.quantity cm3/
1000H.: 37,0...38,0
                 k: 132
Power
              1/mi: 2500
Speed
                                                  Low-idle speed regulation:
TEST BENCH REQUIREMENTS
                                                  Speed
                                                               1/min: 365
Calibrating-oil oc
                                                  Charge press. hPa: -
                                                  Del.quantity cm3/
1000H.: 8,0...14,0
return temp.
with thermometer : 40...48
electronically
                 : 42...50
                                                                cm3/:
                                                  Dispersion
                                                              1000H.: 5,5
Inlet press., bar : 0.2
                                                  Full-load speed regulation:
Calibrating nozzle-holder
                                                               1/min: 1300
                  : 1 688 901 027
 assembly
                                                  Charge press. hPa: 800
                                                  Del.quantity cm3/
                                                               1000H: 59,0...65,0
Opening
              bar: 250...253
 pressure
                                                  Start:
Perforated-plate
 diameter
             mm : 0.5
                                                               1/min: 100
                                                  Speed
                                                  Del.quantity mind.
                                                          cm3/1000H.: 60.0
Test inj. tubing : 1 680 750 017
                                                  Inspection-pump test specifications
                                                  Test specifications in parentheses
Outside diameter
x Wall thickness
x Length
                                                  Timing-device characteristic:
Start of delivery
Prestroke
               mm: 0.3
                                                               1/min: 600
                                                  1st speed
                                                  Charge press. hPa: 800
        (from BDC): +-0.02(0.04)
                                   TD travel
                                                                  nm: 0, 4...1_2
                                                                  mm: (0,1...1,5)
Injection-pump setting values
                                                               1/min:
                                                                      750
Test specifications in parentheses
                                                  2nd speed
                                                  Charge press. hPa: 800
                                                  TD travel
Timing-device travel:
                                                                  mm:
                                                                  mm: (0,9...2,3)
                                                             1/min: 1050
             1/min: 750
Speed
                                                  3rd speed
Charge press. hPa: 800
                                                  Charge press. hPa: 800
                                                                  mm: 2,2...3,0
mm: (1,9...3,3)
Setting value mm: 1,4...1,8
                                                  TD travel
Supply-pump pressure:
```

C20

Supply-pump pressure characteristic: 1	10th speed 1/min: 500
	Charge press. hPa: -
1st speed 1/min: 500	Deliquantity cm3/: -
Charge press. hPa: 800	1000H: (34,540,5)
pressure bar: 2,22,8	Zero delivery (stop):
2nd speed 1/min: 1050	• •
Charge press. hPa: 800	Mech. shutoff:
Supply-pump pressure bar: 4,45,0	Speed 1/min: - Del.quantity cm3/: -
1	1000H.
Overflow quantity at overflow valve:	Clasta shortaff.
1st speed 1/min: 500	Electr. shutoff: Speed 1/min: 375
Charge press. hPa: -	Del.quantity cm3/: -
Oveflow : 4183	. 1000H.
quantity cm3/10s: (2698)	Idla delivery:
Charge press. hPa: 800	Idle delivery:
Overflow : 55138	1st speed 1/min: 375
quantity cm3/10s: (40153)	Del.quantity cm3/: -
Delivery-quant. and breakaway char.:	1000H.: (6,016,0) 2nd speed 1/min: 500
1st speed 1/min: 700	Del.quantity cm3/: -
Charge-air pressure-setting	1000H.: 04,0
point hPa: 400 Del.quantity cm3/: 69,570,5	Automatic starting fuel delivery:
1000H.: (67,073,0)	nacomatic starting ract activery.
2nd speed 1/min: 1400 I	1st speed 1/min: 200
Charge press. hPa: 800	Del.quantity cm3/: - ind. 1000H: 60,0
Del.quantity cm3/: - 1 1 1 1 1 1 1 1 1	1114. 100011. 00,0
3rd speed 1/min: 1370	2nd speed 1/min: 350
Charge press. hPa: 800	Del.quantity cm3/: -
Del.quantity cm3/: - 1 1000H.: 015,0	ax. 1000H: 60,0
4th speed 1/min: 1340	Shutoff electromagnet:
Charge press. hPa: 800	Contractor
Del.quantity cm3/: - 1000H.: 015,0	Cut-in min. voltage : 10,0
5th speed 1/min: 1300	Rated voltage : 12,0
Charge press. hPa: 800	Marmhia a and again his disconsissas
Deliquantity cm3/: - 1000H.: (57,067,0)	Mounting and assembly dimensions:
6th speed 1/min: 1250	Designation
Charge press. hPa: 800	K mm : -
Deliquantity cm3/: 76,079,0 1 1000H.: (74,580,5)	KF mm : 5,15,4 MS mm : 1,31,55
7th speed 1/min: 1050	XK mm : 20,222,2
Charge press. hPa: 800	XL mm : 11,915,3
Deliquantity cm3/: 79,582,5 1000H.: (78,084,0)	Remarks:
1000H.: (78,084,0) 8th speed 1/min: 750	ricinal ro.
Charge press. hPa: 800	
Deliquantity cm3/: -	
1000H: (80,086,0) 9th speed 1/min: 500	
Charge press. hPa: 800	
Del.quantity cm3/: 83,591,5	
1000H: (83,891,2)	

Note inst. in remarks column

Test sheet Edition replaces : CUM 5,9 P : 12.12.86 : 9.85 Calibrating oil : ISO 4113

Injection pump : VE 6/12F1400 R159-15 Type number : 0 460 426 064

Customer-specific information Customer : CUMMINS

Engine : 6BT-5.9

k: 69 Power Speed 1/mi: 2800

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0.2

Calibrating nozzle-holder : 1 688 901 027 assembly `

Opening

pressure bar : 250...253

Perforated-plate diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 850 Setting value mm: 3,8...4,2

Supply-pump pressure:

```
Speed 1/min: 850
Setting value bar: 3,9...4,5
                                                                        1/min: 1400
                                                        2nd speed
Overflow
                                                                             : 55...138
                                                          quantity cm3/10s: (40...153)
Full-load del. W/out charge press.:
                                                         Delivery-quant. and breakaway char.:
              1/min : 1100
                                                         1st speed
                                                                       1/min: 1580
Speed
                                                        Del.quantity cm3/: -
1000H.: 0...2,0
Del.quantity cm3/
              1000H.: 56,5...57,5
                                                        3rd speed 1/min: 1520
Del.quantity cm3/: 8,5...12,5
1000H.: (7,5...13,5)
4th speed 1/min: 1470
                cm3/: 4,0
Dispersion
              1000H.: (4,5)
Low-idle speed regulation:
                                                        Del.quantity cm3/: -
1000H.: (30,0...40,0)
Speed
               1/min: 375
Del.quantity cm3/
                                                                        1/min: 1400
                                                         5th speed
                                                        Del.quantity cm3/: 53.5...56.5
1000H.: (52.0...58.0)
              1000H.: 8,0...14,0
Dispersion
                cm3/: 5,5
              1000H.: -
                                                                       1/min: 1100
                                                         6th speed
                                                        Del.quantity cm3/: -
1000H.: (54,0...60,0)
7th speed 1/min: 850
Full-load speed regulation:
               1/min: 1470
Speed
                                                        Del.quantity cm3/: 32,3...58,2)
Del.quantity
               cm3/
               1000H: 32,0...38,0
                                                                        1/min: 500
                                                         8th speed
                                                         Del.quantity cm3/: 39,0...47,0
Start:
                                                                       1000H: (39,3...46,7)
Speed
               1/min: 100
Del.quantity mind.
                                                         Zero delivery (stop):
         cm3/1000H.: 50,0
                                                        Mech. shutoff:
Inspection-pump test specifications
                                                         Speed
                                                                       1/min: -
                                                        Del.quantity cm3/: - 1000H.
Test specifications in parentheses
Timing-device characteristic:
                                                         Electr. shutoff:
                                                                       1/min: 375
                                                         Speed
                                                        Del.quantity cm3/: - 1000H.
               1/min: 500
1st speed
                  mm: 1,5...2,3
mm: (1,2...2,6)
TD travel
               1/min: 850
2nd speed
                                                         Idle delivery:
TD travel
                  mm: -
                  mm: (3,3...4,7)
                                                         1st speed
                                                                       1/min: 300
               1/min: 1100
                                                        Del.quantity cm3/: 41,0..49,0
1000H.: (40,0..50,0)
3rd speed
                  mm: 5,4...6,2
mm: (5,1...6,5)
TD travel
                                                                       1/min: 375
                                                         2nd speed
                                                        Del.quantity cm3/: -
1000H.: (6,0...16,0)
Supply-pump pressure characteristic:
                                                         3rd speed
                                                                       1/min: 450
                                                        Del.quantity cm3/: -
1000H.: 0...4,0
               1/min: 500
1st speed
Supply-pump
                 bar: 2,5...3,1
 pressure
               1/min: 1100
                                                        Automatic starting fuel delivery:
2nd speed
Supply-pump
                 bar: 4,9...5,5
                                                                       1/min: 130
 pressure
                                                        1st speed
                                                        Del.quantity
                                                                        cm3/:
Overflow quantity at overflow valve:
                                                                       1000H: 60,0
                                                          ind.
               1/min: 500
                                                                       1/min: 400
1st speed
                                                        2nd speed
                    : 41...83
Oveflow
                                                        Del.quantity cm3/: -
 quantity cm3/10s: (26...98)
                                                                       1000H: 60,0
                                                         âx.
C23
```

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K KF MS mm : mm : 5,1...5,4
mm : 1,4...1,6
mm : 0,8
mm : 20,2...22,2
mm : 10,8...14,2 SVS max.

XK XL

Note inst. in remarks column

Test sheet : CUM 5.9 P1 Edition : 16.10.86 replaces : -

Calibrating oil : ISO-4113

Injection pump : VE 6/12F1250 R159-16 Type number : 0 460 426 066

Customer-specific information Customer : CUMMINS

: 6 BT-59 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3 (from BDC): +/-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750 Setting value bar: 3,5...4,1

Section !

State Paris

```
Full-load del. w/out charge press.:
                                                       Delivery-quant. and breakaway char.:
                                                       1st speed
                                                                     1/min: 1400
                                                       Del.quantity cm3/: -
1000H.: 0...3,0
Speed
             1/min : 1100
Del.quantity cm3/
             5...69 5...69 5...69
                                                                     1/min: 1390
                                                       3rd speed
                                                       Del.quantity cm3/: -
1000H.: 0...15,0
                cm3/: 4,0
Dispersion
             1000H.: -
                                                       4th speed
                                                                     1/min: 1350
                                                       Del.quantity cm3/: -
1000H.: 0...15,0
Low-idle speed regulation:
                                                                     1/min: 1300
              1/min: 350
Speed
                                                       5th speed
Del.quantity cm3/
1000H.: 20,5...29,5
Dispersion cm3/: 5,5
                                                       Del.quantity cm3/: -
1000H.: (50,0...60,0)
                                                                     1/min: 1250
                                                       6th speed
                                                       Del.quantity cm3/: 65,7...68,7
1000H.: (64,2...70,2)
             1000H.: -
Full-load speed regulation:
                                                                     1/min: 1100
                                                       7th speed
                                                       Del.quantity cm5/: -
1000H.: (66,0...72,0)
              1/min: 1300
Speed
Del.quantity
               cm3/
              1000H: 52,0...58,0
                                                                     1/min: 750
                                                       8th speed
                                                       Del.quantity cm3/: 68,5...72,5
1000H: (67,5...73,5)
Start:
                                                                     1/min: 500
                                                       9th speed
                                                       Del.quantity cm3/: 51,0...58,0
Speed
              1/min: 100
                                                                     1000H: -
Del.quantity mind.
         cm3/1000H.: 60.0
                                                       Zero delivery (stop):
Inspection-pump test specifications
Test specifications in parentheses
                                                       Mech. shutoff:
                                                                     1/min: -
                                                       Speed
                                                       Del.quantity cm3/: - 1000H.
Timing-device characteristic:
              1/min: 500
                                                       Electr. shutoff:
1st speed
              mm: 1,5...2,3
1/min: 750
TD travel
                                                                     1/min: 375
                                                       Speed
                                                       Del.quantity cm3/: - 1000H.
2nd speed
TD travel
                  mm: -
                  mm: (2,9...4,3)
              1/min: 1100
3rd speed
                                                       Idle delivery:
TD travel
                  mm: 5, 2, ...6, 0
                  mm: (4,9...6,3)
                                                                     1/min: 350
                                                       1st speed
                                                       Del.quantity cm3/: -
1000H.: (20,0..30,0)
Supply-pump pressure characteristic:
                                                                     1/min: 375
                                                       2nd speed
                                                       Del.quantity cm3/: 8,0...14,0
1000H.: (6,0...16,0)
1st speed
              1/min: 500
Supply-pump
                                                                     1/min: 450
                bar: 2,4...3,0
 pressure
                                                       3rd speed
2nd speed
              1/min: 1100
                                                       Del.quantity
                                                                     cm3/:
                                                                    1000H.: 0...4,0
Supply-pump
                bar: 4,8...5,4
 pressure
                                                       Automatic starting fuel delivery:
Overflow quantity at overflow valve:
                                                                     1/min: 130
                                                       1st speed
                                                       Del.quantity cm3/: -
              1/min: 500
1st speed
                    : 41...83
                                                                     1000H: 60,0
Oveflow
                                                        ind.
            cm3/10s: (26...98)
 quantity
              1/min: 1250
                                                                     1/min: 240
2nd speed
                                                       2nd speed
                    : 55...138
Over flow
                                                       Del.quantity cm3/: -
 quantity cm3/10s: (40...153)
                                                                     1000H: 60,0
                                                        ax.
```

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K mm :
KF mm : 5,1...5,4

MS mm : 0,9..1,15

SVS max. mm : 1,2

XK mm : 18,8...20,8

XL mm : 11,8...15,2

Note inst. in remarks column

Test sheet : CUM 5,9 S : 11.12.86 Edition replaces : 10.85 Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R225-4 Type number : 0 460 426 071

Customer-specific information : CUMMINS Customer

: 6BT-5,9 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

bar : 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 9,3 (from BDC): +-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750

Setting value bar: 3,5...4,1

Full-load del Wast change areas	2nd coord 1/min: 1150
Full-load del. w/out charge press.:	2nd speed
Speed 1/min: 900 Del.quantity cm3/	quantity cm3/10s: (40153)
1000H.: 71,572,5 Dispersion cm3/: 4,0	Delivery-quant, and breakaway char.:
Dispersion cm3/: 4.0 1 1000H.: (4.5) 1	1st speed
1	1000H.: 02,0
Low-idle speed regulation:	3rd speed 1/min: 1260 Del.quantity cm3/: -
Speed 1/min: 375	1000H.: 015,0
Del.quantity cm3/ 1000H.: 8,014,0	4th speed 1/min: 1220 Del.quantity cm3/: -
Dispersion cm3/: 5,5	1000H.: 015,0
1000H.: - I Full-load speed regulation:	5th speed
	1000H.: (48,058,0)
Speed	6th speed 1/min: 1150 Del.quantity cm3/: 66,569,5
1000H: 50,056,0	1000H.: (65,071,0)
Start:	7th speed 1/min: 900
Star C.	Del.quantity cm3/: - 1000H.: (69,075,0)
Speed 1/min: 100	8th speed 1/min: 750
Del.quantity mind. cm3/1000H.: 60,0	Del.quantity cm3/: 71,075,0 1000H: (69,376,7)
	9th speed 1/min: 500
Inspection-pump test specifications Test specifications in parentheses	Del.quantity cm3/: 58,066,0 1000H: (58,365,7)
1	• •
Timing-device characteristic:	Zero delivery (stop):
	Mech. shutoff:
1st speed	<pre>Speed 1/min: - Del.quantity cm3/: -</pre>
mm: (1,22,6)	1000H.
2nd speed	Electr. shutoff:
mm: (2,94,3)	Speed 1/min: 375
3rd speed 1/min: 1100	Del.quantity cm3/: - 1000H.
mm: (4,96,3)	
Supply-pump pressure characteristic:	Idle delivery:
1	1st speed
1st speed	Del.quantity cm3/: - 1000H.: (6,016,0)
pressure bar: 0,91,5	2nd speed 1/min: 450
2nd speed 1/min: 500	Del.quantity cm3/: -
Supply-pump pressure bar: 2,43,0	1000H.: 04,0
3rd speed 1/min: 1100	Automatic starting fuel delivery:
Supply-pump pressure bar: 4,85,4	1st speed 1/min: 130
	Del.quantity cm3/: -
Overflow quantity at overflow valve:	ind. 1000H: 70,0
1st speed 1/min: 500	2nd speed 1/min: 240
Oveflow : 4183 quantity cm3/10s: (2698)	Del.quantity cm3/: - ax. 1000H: 60,0
	ŕ
D01	

Shutoff electromagnet:

Cut-in

: 10,0 : 12,0 min. voltage Rated voltage

Mounting and assembly dimensions:

Designation K KF mm : 5,2...5,4 : 0,9...1,1 : 1,0 : 20,2...22,2 : 11,5...14,9 mm MS mm SVS max. mm

ХK mm XL mm

Note inst. in remarks column

Test sheet : CUM 5,9 \$2 Edition : 11.12.86 Edition replaces : 11.12.86

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1200 R225-6 Type number : 0 460 426 073

Customer-specific information : CUMMINS Customer

Engine : 6BT-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0.2

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery Prestroke mm: 0,3 (from BDC): +-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 750 Speed

Setting value mm: 3,4...3,8

Supply-pump pressure:

Speed 1/min: 750

Setting value bar: 3,5...4,1

```
Full-load del. w/out charge press.:
                                                                      1/min: 1300
                                                       1st speed
                                                       Del.quantity cm3/: -
1000H.: 0...3,0
Speed
             1/min : 1100
Del.quantity cm3/
                                                       3rd speed
                                                                      1/min: 1270
                                                       Del.quantity cm3/: 17.5...29.5
1000H.: (18.5...28.5)
4th speed 1/min: 1240
             1000н.: 58,0...59,0
               cm3/: 4.0
Dispersion
             1000H.: (4,5)
                                                       Del.quantity cm3/: -
1000H.: (40,5...50,5)
Low-idle speed regulation:
                                                                      1/min: 1200
                                                       5th speed
                                                       Del.quantity cm3/: 56.0...59.0
1000H.: (54.5...60.5)
              1/min: 375
Speed
Del.quantity cm3/
1000H.: 8,0...14,0
                                                                      1/min: 1100
                                                       6th speed
                                                       Del.quantity cm3/: -
1000H.: (55,5...61,5)
7th speed 1/min: 750
Full-load speed regulation:
              1/min: 1240
                                                       Del.quantity cm3/: 56.0...60.0
1000H.: (54.3...61.7)
Del.quantity cm3/
              1000H: 42,5...48,5
                                                                      1/min: 500
                                                       8th speed
                                                       Del.quantity cm3/: 48,5...56,5
Start:
                                                                     1000H: (48,8...56,2)
Speed
              1/min: 100
Del.quantity mind.
                                                       Zero delivery (stop):
         cm3/1000H.: 50,0
                                                       Mech. shutoff:
Inspection-pump test specifications
                                                       Speed
                                                                     1/min: -
                                                       Del.quantity cm3/: - 1000H.
Test specifications in parentheses
Timing-device characteristic:
                                                       Electr. shutoff:
                                                                     1/min: 375
                                                       Speed
                                                       Del.quantity cm3/: - 1000H.
1st speed
              1/min: 500
TD travel
                  mm: 1,5...2,3
                  mm: (1,2...2,6)
2nd speed
              1/min: 750
                                                       Idle delivery:
TD travel
                  min:
                  mm: (2,9...4,3)
                                                       1st speed
                                                                     1/min: 350
                                                       Del.quantity cm3/: 23,0..31,0
1000H.: (22,0..32,0)
              1/min: 1100
3rd speed
TD travel
                  mm: 5,2...6,0
                                                                     1/min: 375
                  mm: (4,9...6,3)
                                                       2nd speed
                                                       Del.quantity cm3/: -
1000H.: (6,0...16,0)
Supply-pump pressure characteristic:
                                                                     1/min: 500
                                                       3rd speed
                                                       Del.quantity cm3/: -
1000H.: 0...4,0
              1/min: 500
1st speed
Supply-pump
                bar: 2,4...3,0
 pressure
              1/min: 1100
2nd speed
                                                       Automatic starting fuel delivery:
Supply-pump
                bar: 4,8...5,4
                                                                     1/min: 130
                                                       1st speed
 pressure
                                                       Del.quantity cm3/: -
Overflow quantity at overflow valve:
                                                        ind.
                                                                     1000H: 60,0
              1/min: 500
1st speed
                                                       2nd speed
                                                                     1/min: 400
Oveflow.
                    : 41...83
                                                       Del.quantity cm3/: -
                                                                     1000H: 50,0
            cm3/10s: (26...98)
 quantity
              1/min: 1200
2nd speed
Overflow
                    : 55..138
                                                       Shutoff electromagnet:
 quantity cm3/10s: (40...153)
                                                       Cut-in
                                                                           : 10.0
                                                        min. voltage
Delivery-quant. and breakaway char.:
D04
```

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation K KF MS SVS max. XK XL mm : -mm : 5,1...5,4 mm : 1,3..1,55 mm : 1,6 mm : 20,2...22,2 mm : 11,1...14,5

Note inst. in remarks column

Test sheet : CUM 5,9 S3 Edition : 11.12.86

replaces

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1050 R225-10 Type number : 0 460 426 076

Customer-specific information Customer : CUMMINS

: 6BT-5,9 Engine

k: 89 Power Speed 1/mi: 2100

TEST BENCH REQUIREMENTS

Calibrating-oil oc return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0.2

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

bar : 250...253 pressure

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3,3...3,7

Supply-pump pressure:

1/min: 750 : 55..138 Overflow quantity cm3/10s: (40...153) Setting value bar: 4,0...4,6 Full-load del. w/out charge press.: Delivery-quant. and breakaway char.: 1st speed 1/min: 1200 Del.quantity cm3/: -1000H.: 0...2,0 1/min : 750 Speed Del.quantity cm3/ 1000H.: 59,5...60,5 1/min: 1160 3rd speed Del.quantity cm3/: -1000H.: 0...15,0 cm3/: 4,0 Dispersion 1000H.: (4,5) 4th speed 1/min: 1130 Del.quantity cm3/: -1000H.: 0...15,0 Low-idle speed regulation: 5th speed 1/min: 1100
Del.quantity cm3/: 42.0...48.0
1000H.: (40.0...50.0)
6th speed 1/min: 1050 Speed 1/min: 375 Del.quantity cm3/ 1000H.: 8,0...14,0 Full-load speed regulation: Del.quantity cm3/: 57.2...60.2 1000H.: (55.7...61.7) Speed 1/min: 1100 1/min: 900 Deliquantity cm3/ 7th speed Del.quantity cm3/: 58.6...61.6 1000H.: (57.1...63.1) 8th speed 1/min: 750 1000H: 42,0...48,0 Start: Del.quantity cm3/: 9th speed 1/min: 500
Del.quantity cm3/: 53,0...61,0 Speed 1/min: 100 Deliquantity mind. cm3/1000H.: 70,0 1000H: (53,3...60,7) Inspection-pump test specifications Test specifications in parentheses Zero delivery (stop): Mech. shutoff: 1/min: -Timing-device characteristic: Speed Del.quantity cm3/: - 1000H. 1/min: 500 1st speed mm: 1,4...2,2 TD travel mm: (1,1...2,5)Electr. shutoff: 1/min: 750 1/min: 375 2nd speed Speed Del.quantity cm3/: - 1000H. TD travel mm: mm: (2,8...4,2) 1/min: 1050 3rd speed TD travel mm: 5,5...6,3 Idle delivery: mm: (5,2...6,6)1/min: 350 1st speed Del.quantity cm3/: 17,0..26,0 Supply-pump pressure characteristic: 1000H.: (16,5..26,5) 1/min: 375 1st speed 1/min: 500 2nd speed Del.quantity cm3/: -1000H.: (6,0...16,0) 3rd speed 1/min: 500 Supply-pump bar: 2,9...3,5 1/min: 1050 pressure 2nd speed Del.quantity cm3/: -1000H.: 0...4,0 Supply-pump bar: 5,3...5,9 pressure Automatic starting fuel delivery: Overflow quantity at overflow valve: 1/min: 500 1/min: 130 1st speed 1st speed cm3/: -: 41...83 Del.quantity Oveflow cm3/10s: (26...98) 1/min: 1050 1000H: 70,0 quantity ind. 2nd speed 1/min: 300 2nd speed

Del.quantity cm3/: - ax. 1000H: 70,0

Shutoff electromagnet:

Cut-in

min. voltage : 20,0 Rated voltage : 24,0

Mounting and assembly dimensions:

Designation

mm : -mm : 5,1...5,4 mm : 1,3..1,55 mm : 1,6 mm : 18,8...20,8 mm : 12,1...15,5 K KF MS SVS max.

ХK

XL

Note inst. in remarks column

Test sheet : CUM 5,9 84 Edition replaces : 11.12.86

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1000 R225-11 Type number : 0 460 426 080

Customer-specific information Customer : CUMMINS

: 6BT-5,9 Engine

k: 65 Power Speed 1/mi: 2200

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. OC

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm : 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750

Setting value mm: 3,3...3,7

Supply-pump pressure:

```
Speed 1/min: 750
Setting value bar: 3,5...4,1
                                                                       1/min: 500
                                                        1st speed
                                                                            : 41...83
                                                        Oveflow
                                                        quantity cm3/10s: (26...98)
2nd speed 1/min: 1000
Full-load dei. w/out charge press.:
                                                        Over flow
                                                                            : 55...138
                                                          quantity cm3/10s: (40...153)
Speed
              1/min : 900
Del.quantity cm3/
1000H.: 47.5...48.5
Dispersion cm3/: 4.0
                                                        Delivery-quant. and breakaway char.:
                                                        1st speed
                                                                      1/min: 1100
                                                        Del.quantity 6m3/: -
1000H.: 0...2,0
              1000H.: (4,5)
Low-idle speed regulation:
                                                        3rd speed
                                                                       1/min: 1090
                                                        Del.quantity cm3/: -
1000H.: 0...15,0
               1/min: 375
Del.quantity cm3/
                                                                       1/min: 1060
                                                        4th speed
                                                        Del.quantity cm3/: -
1000H.: 0...15,0
              1000H.: 8,0...14,0
                cm3/: 5,5
Dispersion
              1000H.:
                                                                       1/min: 1050
                                                        5th speed
                                                        Del.quantity cm3/: -
1000H.: (28,0...38,0)
Full-load speed regulation:
                                                                       1/min: 1000
Speed
               1/min: 1050
                                                        6th speed
                                                        Del.quantity cm3/: 44,5...47,5
1000H.: (43,0...49,0)
Del.quantity cm3/
               1000H: 30,0...36,0
                                                                       1/min: 900
                                                        7th speed
                                                        Del.quantity cm3/: -
1000H: (45,0...51,0)
8th speed 1/min: 750
Del.quantity cm3/: 45,0...49,0
1000H: (43,3...50,7)
Start:
Speed
               1/min: 100
Del.quantity mind.
         cm3/1000H.: 40,0
                                                                       1/min: 500
                                                        9th speed
                                                        Del.quantity cm3/: 33,0...41,0
Inspection-pump test specifications
                                                                       1000H: (33,3...40,7)
Test specifications in parentheses
                                                        Zero delivery (stop):
Timing-device characteristic:
                                                        Mech. shutoff:
               1/min: 500
                                                                       1/min: -
1st speed
                                                        Speed
TD travel
                  mm: 1,1...1,9
                                                        Del.quantity cm3/: -
                                                                      1000H.
                  mm: (0,8...2,2)
               1/min: 750
2nd speed
TD travel
                                                        Electr. shutoff:
                  mm:
               mm: (2,8...4,5)
1/min: 1000
                                                                       1/min: 375
                                                        Speed
                                                        Del.quantity cm3/: - 1000H.
3rd speed
                  mm: 5,3...6,1
TD travel
                  mm: (5,0...6,4)
                                                        Idle delivery:
Supply-pump pressure characteristic:
                                                                       1/min: 375
                                                        1st speed
                                                        Del.quantity cm3/: -
1000H.: (6,0...16,0)
               1/min: 200
1st speed
Supply-pump
                 bar: 0,8...1,4
                                                                       1/min: 450
                                                        2nd speed
 pressure
                                                        Del.quantity cm3/: -
1000H.: 0...4,0
               1/min: 500
2nd speed
Supply-pump
                 bar: 2,4...3,0
 pressure
3rd speed
               1/min: 1000
                                                        Automatic starting fuel delivery:
Supply-pump
                 bar: 4,5...5,1
                                                        1st speed
                                                                       1/min: 200
 pressure
                                                        Del.quantity cm3/: -
                                                                       1000H: 45,0
Overflow quantity at overflow valve:
                                                         ind.
```

2nd speed 1/min: 370 Del.quantity cm3/: -1000H: 50,0

Shutoff electromagnet:

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation K

mm : -

Note inst. in remarks column

Test sheet : PER 6.0 A Edition replaces : 12.12.86

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R241 Type number : 0 460 426 085

Customer-specific information : PERKINS Customer

: T6.60 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening |

pressure bar : 172...175

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Start of delivery

Prestroke mm: 0,3 (from BDC): +-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1100 Charge press. hPa: 1000

```
Setting value bar: 7,2...7,8
                                                                 Charge press. hPa: 1000
                                                                 Supply-pump
                                                                                  bar: 4,7 ...5,3
1/min: 1300
Full-load del. with charge press.:
                                                                  pressure
                                                                 2nd speed
                                                                                    hPa: 1000
                 1/min: 1000
                                                                 Charge press.
Speed
Charge press. hPa: 1000
                                                                 Supply-pump
Del.quantity cm3/
1000H:: 90,5...91,5
Dispersion cm3/: 3,5
                                                                                    bar: 8,0...8,6
                                                                  pressure
                                                                 Overflow quantity at overflow valve:
                1000H : (4,0)
                                                                                  1/min: 500
                                                                 1st speed
                                                                 Charge press. hPa: 1000
Full-load del. w/out charge press.:
                                                                 Oveflow
                                                                                         : 41...138
                                                                  quantity cm3/10s: (26...153) nd speed 1/min: 1300
Speed
                1/min : 700
Del.quantity cm3/
                                                                 2nd speed
                                                                 Charge press. hPa: 1000
                1000H.: 80,5...81,5
                                                                                        : 55...138
                                                                 Over flow
Low-idle speed regulation:
                                                                  quantity cm3/10s: (40...153)
                                                                 Delivery-quant. and breakaway char.: 1st speed 1/min: 700
                 1/min: 350
Speed
Charge press. hPa: -
Del.quantity cm3/
1000H.: 13,0...17,0
nichersion cm3/: 3,5
                                                                 Charge-air pressure-setting
                                                                 point hPa: 350
Del.quantity cm3/: 86,5...87,5
1000H.: (84,0...90,0)
2nd speed 1/min: 1530
                1000H.: (4,5)
Full-load speed regulation:
                                                                 2nd speed
                                                                 Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...3,0
Speed
                 1/min: 1400
Charge press. hPa: 1000
                                                                 3rd speed 1/min: 1480
Charge press. hPa: 1000
Del.quantity cm3/: 7,5...16,5
1000H.: (7,0...17,0)
4th speed 1/min: 1400
Del.quantity cm3/
                 1000H: 52,0...58,0
Start:
                                                                4th speed 1/min: 1400
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: (50,0...60,0)
5th speed 1/min: 1300
Charge press. hPa: 1000
Del.quantity cm3/: 81,0...84,0
1000H.: (79,5...85,5)
Speed
                 1/min: 100
Del.quantity mind.
          cm3/1000H.: 90,0
Inspection-pump test specifications
Test specifications in parentheses
                                                                                  1/min: 1000
                                                                 6th speed
                                                                 Charge press. hPa: 1000
Timing-device characteristic:
                                                                 Del.quantity cm3/: -
1000H.: (88,0...94,0)
1st speed
                 1/min: 950
                                                                                  1/min: 700
Charge press. hPa: 1000
                                                                 7th speed
                                                                Charge press. hPa: 1000
Del.quantity cm3/: 89,0...92
1000H.: (86,8...94,2)
8th speed 1/min: 700
                     mm: 0,5...1,1
TD travel
                     mm: (0,1...1,5)
2nd speed
                 1/min: 1100
Charge press. hPa: 1000
                                                                 Charge press. hPa: -
TD travel
                     mm: -
                                                                 Del.quantity cm3/:
                     mm: (1,6...3,0)
                                                                                  1000H: (77,3...84,7)
1/min: 500
                 1/min: 1300
3rd speed
Charge press. hPa: 1000
                                                                 9th speed
                     mm: 2,9...3,7
                                                                 Charge press. hPa:
TD travel
                                                                Del.quantity cm3/: 70,5...75,5
1000H: (69,3...76,7)
                     mm: (2,6...4,0)
Supply-pump pressure characteristic:
                                                                 Zero delivery (stop):
1st speed 1/min: 500
```

```
Mech. shutoff:
              1/min: 1300
Speed
Del.quantity cm3/: -
Electr. shutoff:
               1/min: 1300
Speed
ELAB
               volt: -
Del.quantity cm3/: -
Idle delivery:
               1/min: 350
1st speed
Del.quantity cm3/: -
1000H.: (10,0..20,0)
               1/min: 400
2nd speed
Del.quantity cm3/: 4,0...10,0
1000H.: (2,0...12,0)
3rd speed 1/min: 450
Del.quantity cm3/: -
1000H.: 0...2,5
Automatic starting fuel delivery:
1st speed
               1/min: 150
Del.quantity cm3/: -
               1000H: 100,0
 ind.
               1/min: 250
2nd speed
Deliquantity cm3/: -
               1000H: 70,0
Shutoff electromagnet:
Cut-in
min. voltage
                    : 10,0
                    : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
                miii
KF
                    : K-0T
                mm
               mm : 1.1.1,35
mm : 1.3
mm : 17.0...19.0
MS
SVS max.
ΧK
XL
                mm: 10,5...13,9
Remarks:
```

 m^{m}

1

Note inst. in remarks column

Test sheet : CUM 5,9 L2 Edition replaces : 10.12.86

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1150 R173-5 Type number : 0 460 426 086

Type number : 0 460 426 086

Customer-specific information Customer : CUMMINS

: 6BTA-5.9 IND. Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 027 assembly

Opening

bar : 250...253 pressure

Perforated-plate

mm : 0.5 diameter

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,,3 (from BDC): +-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 900 Charge press. hPa: 1000

Setting value mm: 1,9...2,3

Supply-pump pressure:

Speed 1/min: 900 Charge press. hPa: 1000

```
Setting value bar: 4,4...5,0
                                                             Charge press. hPa: 1000
                                                             Supply-pump
                                                                             bar: 2,7...3,3
1/min: 1150
Full-load del. with charge press.:
                                                              pressure
                                                             2nd speed
Speed
                1/min: 750
                                                             Charge press.
                                                                               hPa: 1000
Charge press. hPa: 1000
                                                             Supply-pump
Del.quantity cm3/

1000H.: 81.5...82.5

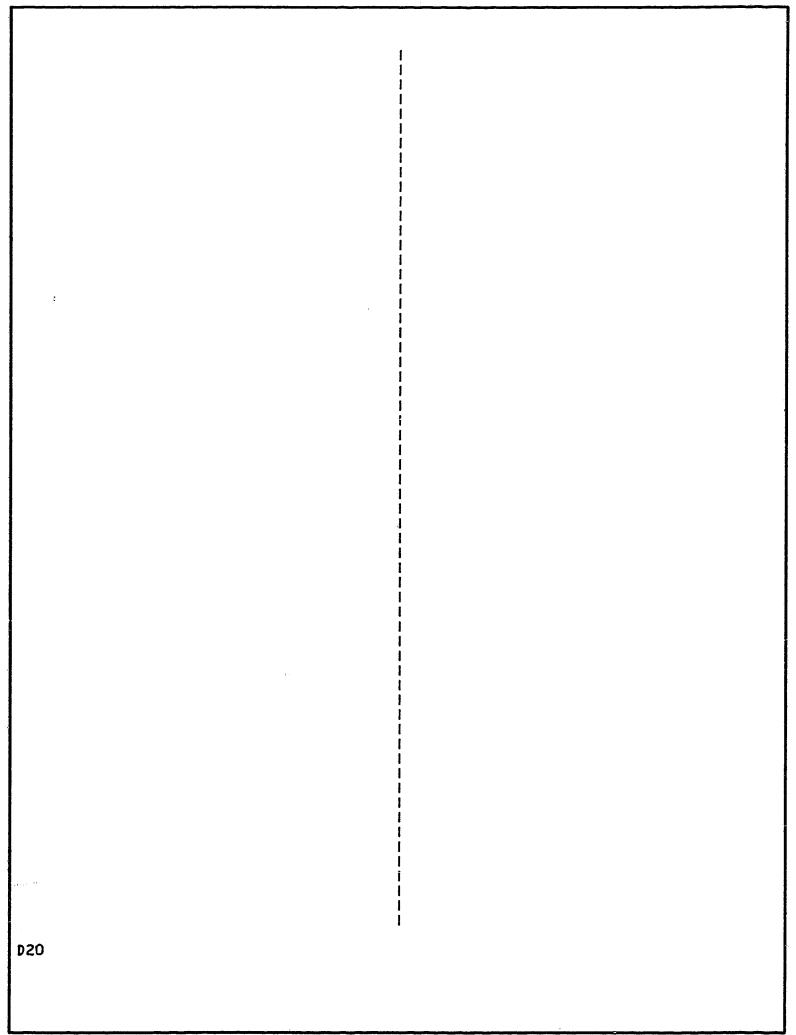
Dispersion cm3/: 4.0

1000H.: (4.5)
                                                                               bar: 5,5...6,1
                                                              pressure
                                                             Overflow quantity at overflow valve:
                                                                             1/min: 500
                                                             1st speed
Full-load del. w/out charge press.:
                                                             Charge press. hPa: -
                                                             Oveflow
                                                                                   : 41...83
                                                            quantity cm3/10s: (267...98)
2nd speed 1/min: 1150
               1/min : 500
Deloquantity cm3/
                                                            Charge press. hPa: 1000
               1000H.: 42,5...43,5
                                                                               : 55...138
                                                             Overflow
                                                              quantity cm3/10s: (40...153)
Low-idle speed regulation:
Speed
                1/min: 375
                                                             Delivery-quant. and breakaway char.:
                                                             1st speed
                                                                           1/min: 700
Charge press. hPa: -
Del.quantity cm3/
1000H.: 8,0...14,0
                                                             Charge-air pressure-setting
                                                              point
                                                                               hPa: 400
                 cm3/: -
                                                            Del.quantity cm3/: 68,5...69,5
1000H.: (66,0...72,0)
Dispersion
               1000H.: 5,5
                                                                            1/min: 1280
Full-load speed regulation:
                                                             2nd speed
                                                            Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...3,0
Speed
                1/min: 1200
Charge press. hPa: 1000
Del.quantity cm3/
                                                                            1/min: 1260
                                                             3rd speed
                                                            Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...15,0
                1000H: 60,5...66,5
Start:
                                                            4th speed 1/min: 1240
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...15,0
Speed
                1/min: 100
Del.quantity mind.
          cm3/1000H.: 70,0
                                                                             1/min: 1200
                                                             5th speed
                                                            Charge press. hPa: 1000
Inspection-pump test specifications
                                                            Del.quantity cm3/: -
1000H.: (58,5....68,5)
Test specifications in parentheses
                                                                             1/min: 1150
                                                             6th speed
                                                            Charge press. hPa: 1000
Del.quantity cm3/: 76,0...79,0
1000H.: (74,5...80,5)
7th speed 1/min: 900
Timing-device characteristic:
                1/min: 750
1st speed
Charge press. hPa: 1000
                                                            Charge press. hPa: 1000
Del.quantity cm3/: 79.5...82.5
1000H.: (78.0...84.0)
8th speed 1/min: 750
TD travel
                    mm: 1,0...1,8
                    mm: (0,7...2,1)
                1/min: 900
2nd speed
Charge press. hPa: 1000
                                                            Charge press. hPa: 1000
TD travel
                   mm:
                                                            Del.quantity cm3/: -
1000H: (79,0...84,0)
9th speed 1/min: 500
              mm: (1,4...2,8)
1/min: 1150
3rd speed
Charge press. hPa: 1000
                   mm: 2,5...3,3
mm: (2,2...3,6)
                                                            Charge press. hPa: 1000
TD travel
                                                            Del.quantity cm3/: 80.0...88.0
1000H: (80.3...87.3)
                                                                            1/min: 500
                                                             10th speed
Supply-pump pressure characteristic:
                                                             Charge press. hPa: -
1st speed 1/min: 500
```

```
Del.quantity cm3/: -
               1000H: (40,0...46,0)
Zero delivery (stop):
Mech. shutoff:
Speed
               1/min: -
Del.quantity cm3/: - 1000H.
Electr. shutoff:
               1/min: 375
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
              1/min: 350
Del.quantity cm3/: 19,0..31,0
1000H.: (20,0..30,0)
2nd speed 1/min: 375
Del.quantity cm3/: -
1000H.: (6,0...16,0)
3rd speed 1/min: 500
Del.quantity cm3/: -
1000H.: 0...4,0
Automatic starting fuel delivery:
1st speed
               1/min: 130
Del.quantity cm3/: -
               1000H: 70,0
 ind.
              1/min: 280
2nd speed
Del.quantity cm3/: -
               1000H: 70,0
Shutoff electromagnet:
Cut-in
Rated voltage : 10.0
Mounting and assembly dimensions:
Designation
                mm
KF
                    : 5,1...5,4
: 1,3..1,55
                mm
MS
                mm
SVS max.
                    : 2,4
                mm
ХK
                    : 18,8...20,8
                mm
XL
                    : 11,6...15,0
                mm
Correction at adjusting nut (46)
```

```
Speed 1/min: 750
Charge press. hPa: 1000
Setting value bar: 3,3...3,9
BOSCH-INJ.-PUMP TEST SPECIFICATIONS
Note inst. in remarks column
Test sheet
                  : CUM 5,9 L3
                                                    Full-load del. with charge press.:
Edition
                   : 10.12.86
replaces
                                                                  1/min: 750
                                                    Speed
                                                    Charge press. hPa: 1000
                  : ISO 4113
Calibrating oil
                                                    Charge press. ...
Del.quantity cm3/
1000H.: 82,5...83,5
Injection pump
                  : VE 6/12F1050 R173-6
Type number
                   : 0 460 426 087
                                                                 cm3/:4,0
                                                    Dispersion
                                                                 1000H : (4,5)
Customer-specific information
Customer
                   : CUMMINS
                                                    Full-load del. w/out charge press.:
Engine
                   : 6BTA-5,9
                                                    Speed
                                                                 1/min : 500
                                                    Del.quantity cm3/
                                                                 1000H.: 41,0...42,0 cm3/: 9,0
Power
                  k: 125
               1/mi: 2100
Speed
                                                    Dispersion
                                                                 1000H.: -
TEST BENCH REQUIREMENTS
                                                    Low-idle speed regulation:
Calibrating-oil oC
return temp.
                                                    Speed
                                                                  1/min: 375
with thermometer : 40...48
                                                    Charge press. hPa: -
                                                    Del.quantity cm3/
1000H.: 8,0...14,0
electronically
                 : 42...50
                                                                   cm3/: 5,5
                                                    Dispersion
Inlet press., bar : 0.2
                                                                 1000H.:
Calibrating nozzle-holder
                                                    Full-load speed regulation:
                  : 1 688 901 027
 assembly
                                                                  1/min: 1100
Opening
                                                    Charge press. hPa: 1000
                                                    Del.quantity cm3/
pressure
              bar: 250...253
                                                                  1000H: 59,0...65,0
Perforated-plate
diameter
              mm: 0.5
                                                    Start:
                                                                  1/min: 100
                                                    Speed
                                                    Del.quantity mind.
cm3/1000H.: 60,0
Test inj. tubing : 1 680 750 017
Outside diameter
x Wall thickness : 2
                                                    Inspection-pump test specifications
               mm: 840
                                                    Test specifications in parentheses
x Length
Start of delivery
Prestroke
               mm : 0.3
                                                    Timing-device characteristic:
        (from BDC): +-0.02(0.04)
                                                    1st speed
                                                                  1/min: 600
                                                    Charge press. hPa: 1000
Injection-pump setting values
                                                                     mm: 0,5...1,3
mm: (0,2...1,6)
Test specifications in parentheses
                                                    TD travel
                                                                  1/min: 750
Timing-device travel:
                                                    2nd speed
                                                    Charge press. hPa: 1000
                                                    TD travel
                                                                     mm: -
             1/min: 750
Speed
Charge press. hPa: 1000
                                                                     mm: (0,9...2,3)
                                                    3rd speed 1/min: 1050
Setting value mm: 1,4...1,8
                                                    Charge press. hPa: 1000
Supply-pump pressure:
```

```
mm: 2,1...2,9
mm: (1,8...3,2)
TD travel
                                                           Charge press. hPa: 1000
                                                           Del.quantity cm3/: -
                                                                           1000H: (80,0...86,0)
                                                                           1/min: 500
Supply-pump pressure characteristic:
                                                           9th speed
                                                           Charge press. hPa: 1000
Del.quantity cm3/: 80.5...88.5
1090H: (80.8...88.2)
                1/min: 200
1st speed
Charge press. hPa: 1000
Supply-pump
                                                                           1/min: 500
                                                           10th speed
                                                           Charge press. hPa: -
                  bar: 0,8...1,4
 pressure
2nd speed
                1/min: 500
                                                           Del.quantity cm3/: -
Charge press. hPa: 1000
                                                                           1000H: (38,5...44,5)
Supply-pump
                bar: 2,3...2,9
1/min: 1050
 pressure
                                                           Zero delivery (stop):
3rd speed
Charge press. hPa: 1000
                                                           Mech. shutoff:
Supply-pump
                                                                           1/min: -
                                                           Speed
                                                           Del.quantity cm3/: - 1000H.
                  bar: 4,5...5,1
 pressure
Overflow quantity at overflow valve:
                                                           Electr. shutoff:
              1/min: 500
                                                                          1/min: 375
1st speed
                                                           Speed
                                                           Del.quantity cm3/: - 1000H.
Charge press. hPa: -
Oveflow 
                      : 41...83
 quantity cm3/10s: (26...98)
2nd speed 1/min: 1050
                                                           Idle delivery:
Charge press. hPa: 1000
Over Flow
                      : 55...138
                                                           1st speed
                                                                           1/min: 375
                                                           Del.quantity cm3/: -
1000H.: (6,0...16,0)
 quantity cm3/10s: (40...153)
                                                           2nd speed
                                                                           1/min: 500
Delivery-quant. and breakaway char.:
                                                           Del.quantity cm3/:
1st speed
               1/min: 700
                                                                          1000H.: 0...4,0
Charge-air pressure-setting
                  hPa: 400
 point
Del.quantity cm3/: 70,5...71,5
1000H.: (68,0...74,0)
2nd speed 1/min: 1180
Charge press. hPa: 1000
                                                           Automatic starting fuel delivery:
                                                                           1/min: 250
                                                           1st speed
                                                           Del.quantity cm3/: -
Del.quantity cm3/: -
1000H.: 0...3,0
                                                                           1000H: 55,0
                                                            ind.
                1/min: 1150
                                                                           1/min: 350
3rd speed
                                                           2nd speed
Charge press. hPa: 1000
                                                           Del, quantity cm3/: -
Del.quantity cm3/: -
1000H.: 0...15,0
                                                                           1000H: 60,0
4th speed 1/min: 1120
Charge press. hPa: 1000
                                                           Shutoff electromagnet:
Del.quantity cm3/: -
1000H.: 0...15,0
                                                           Cut-in
                                                                                 : 10,0
                                                           min. woltage
                                                                                 : 12,0
               1/min: 1100
                                                           Rated voltage
5th speed
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: (57,0...67,0)
6th speed 1/mn: 1050
                                                           Mounting and assembly dimensions:
                                                           Designation
Charge press. hPa: 1000
Del.quantity cm3/: 77.5...80.5
1000H.: (76.0...82.0)
                                                                            mm
                                                           KF
                                                                                 : 5,1...5,4
: 1,3..1,55
                                                                            mm
                                                           MS
                                                                            mm
               1/min: 900
                                                           SVS max.
                                                                                 : 2,0
7th speed
                                                                            mm
                                                                                 : 18,8...20,8
Charge press. hPa: 1000
                                                           ΧK
                                                                            mm
Del.quantity cm3/: 78.0...81.0
1000H.: (76.5...82.5)
8th speed 1/min: 750
                                                           XL
                                                                            mm
                                                                                 : 12,2...15,6
                                                           Correction at adjusting nut (46)
8th speed
```



Note inst. in remarks column

Test sheet : PER 6.0 A1 Edition : 15.12.86 replaces : -

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R241-1 Type number : 0 460 426 088

Customer-specific information Customer : PERKINS

Engine : T6.60

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

pressure bar : 172...175

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1100 Charge press. hPa: 1000 Setting value mm: 2,1...2,5

Supply-pump pressure:

1/min: 1100 Speed Charge press. hPa: 1000

```
Setting value bar: 7,2...7,8
                                                                 Charge press. hPa: 1000
                                                                 Supply-pump
                                                                                  bar: 4,7...5,3
1/min: 1300
Full-load del. with charge press.:
                                                                  pressure
                                                                 2nd speed
                 1/min: 1000
                                                                 Charge press.
                                                                                    hPa: 1000
Speed
Charge press. hPa: 1000
Del.quantity cm3/
1000H.: 83,0...84,0
Dispersion cm3/: 3,5
                                                                 Supply-pump
                                                                  pressure
                                                                                     bar: 8,0...8,6
                                                                 Overflow quantity at overflow valve:
                1000H: (4,0)
                                                                 1st speed
                                                                                  1/min: 500
                                                                 Charge press. hPa: 1000
Full-load del. w/out charge press.:
                                                                 Oveflow |
                                                                                         : 41...138
                                                                  quantity cm3/10s: (26...153)
Speed
                1/min : 700
Del.quantity cm3/
                                                                 2nd speed 1/min: 1300
                1000H.: 76,0...77,0
                                                                 Charge press. hPa: 1000
                                                                 Overflow |
                                                                                        : 55...138
                                                                  quantity cm3/10s: (40...153)
Low-idle speed regulation:
                                                                 Delivery-quant. and breakaway char.: 1st speed 1/min: 700
                 1/min: 350
Speed
Charge press. hPa: -
Del.quantity cm3/
1000H.: 13.0...17.0
Dispersion cm3/: 3.5
                                                                 Charge-air pressure-setting
                                                                 point hPa: 250
Del.quantity cm3/: 80.5...81.5
1000H.: (78.0...84.0)
                1000H.: (4,5)
Full-load speed regulation:
                                                                                  1/min: 1530
                                                                 2nd speed
                                                                Speed
                 1/min: 1400
Charge press. hPa: 1000
Deliquantity cm3/
                 1000H: 52,0...58,0
Start:
                                                                                  1/min: 1400
                                                                4th speed 1/min: 1400
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: (50,0...60,0)
Sth speed 1/min: 1300
Charge press. hPa: 1000
Del.quantity cm3/: 74,0...77,0
1000H.: (72,5...78,5)
                                                                 4th speed
Speed
                 1/min: 100
Del.quantity mind.
          cm3/1000H.: 88,0
Inspection-pump test specifications
Test specifications in parentheses
                                                                 6th speed
                                                                                  1/min: 1000
                                                                 Charge press. hPa: 1000
Timing-device characteristic:
                                                                The speed 1/min: 700

Del.quantity cm3/: -

1000H.: (80,5...86,5)

7th speed 1/min: 700

Charge press. hPa: 1000

Del.quantity cm3/: 82,0...85,0

1000H.: (79,8...87,2)

8th speed 1/min: 700
1st speed
                 1/min: 950
                   hPa: 1000
mm: 0,5...1,1
Change press.
TD travel
                     mm: (0,1,...,5)
2nd speed
                 1/min: 1100
Charge press. hPa: 1000
TD travel
                                                                 Charge press. hPa:
                     mm:
                                                                Del.quantity cm3/: -
1000H: (72,8...80,2)
9th speed 1/min: 500
                 mm: (1,6...3,0)
1/min: 1300
3rd speed Charge press. hPa: 1000
Th travel mm: 2,9...3,7
3rd speed
                                                                 9th speed
                                                                Charge press. hPa: -
Del.quantity cm3/: 68,5...71,5
1000H: (66,3...73,7)
                     mm: (2,6...4,0)
Supply-pump pressure characteristic:
                                                                 Zero delivery (stop):
1st speed 1/min: 500
```

```
Mech. shutoff:
Speed
              1/min: 1300
Deliquantity cm3/: - i000H.
Idle delivery:
               1/min: 350
1st speed
Del.quantity cm3/: -
1000H.: (10,0..20,0)
               1/min: 400
2nd speed
Del.quantity cm3/: 4.0...10.0
1000H.: (2.0...12.0)
3rd speed
               1/min: 450
Del.quantity cm3/: -
1000H.: 0...2,5
Automatic starting fuel delivery:
               1/min: 150
1st speed
Del.quantity cm3/: -
ind. 1000H: 100,0
               1/min: 250
2nd speed
Del.quantity cm3/: -
               1000H: 70,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
                     : 10,0
                     : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
                mm
KF
                    : K-0T
                mm
                    : 1,1..1,35
: 1,3
: 17,0...19,0
: 10,5...13,9
MS
                mm
SVS max.
                mm
ΧK
                mm
XL
                mm
Remarks:
Correction at adjusting nut (46)
```

Full-load del. w/out charge press.: BOSCH-INJ.-PUMP TEST SPECIFICATIONS Speed 1/min : 1000 Note inst. in remarks column Del.quantity cm3/ 1000H.: 76.5...77,5 cm3/: 3,5 : PER 6,0 B Test sheet Dispersion Edition : 15.12.86 1000H.: (4,5) replaces : ISO 4113 Low-idle speed regulation: Calibrating oil : VE 6/12F1300 R247 Injection pump Speed 1/min: 300 Del.quantity cm3/ 1000H.: 19.5...23,5 Dispersion cm3/: 3,5 Type number : 0 460 426 090 Customer-specific information Customer 1000H.: (4,5) : PERKINS Full-load speed regulation: : NA6.60 Engine 1/min: 1400 Speed TEST BENCH REQUIREMENTS Del.quantity cm3/ 1000H: 44,5...50,5 Calibrating-oil C return temp. Start: with thermometer : 40...48 electronically : 42...50 Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 80.0 Inlet press., bar: 0.2 Calibrating nozzle-holder Inspection-pump test specifications : 1 688 901 020 Test specifications in parentheses assembly Opening bar: 172...175 Timing-device characteristic: pressure 1/min: 950 Perforated-plate 1st speed mm: 0,6...1,2 TD travel diameter mm : 0.6mm: (0,2...1,6)1/min: 1100 2nd speed TD travel Test inj. tubing ; 1 680 750 901 mm: mm: (1,3,...2,7)1/min: 1300 Outside diameter 3rd speed mm: 2,8...3₆ mm: (2,5...3₉) x Wall thickness : 2 TD travel mm: 840 x Length Start of delivery Supply-pump pressure characteristic: Prestroke mm:0.5(from BDC): +-0.02(0.04)1/min: 500 1st speed Supply-pump bar: 2,7....3,3 Injection-pump setting values Test specifications in parentheses pressure 1/min: 1300 2nd speed Supply-pump bar: 6,1...6,7 Timing-device travel: pressure Overflow quantity at overflow valve: 1/min: 1100 Speed Setting value mm: 1,8...2,2 1/min: 500 1st speed Oveflow : 41...83 Supply-pump pressure: cm3/10s: (26...98) 1/min: 1300 : 55...138 quantity 1/min: 1100 2nd speed Speed Setting value bar: 5,2...5,8 Over #low quantity cm3/10s: (40...153)

```
Delivery-quant. and breakaway char.:
              1/min: 1530
1st speed
Del.quantity cm3/: -
1000H.: 0...2,5
3rd speed
               1/min: 1480
Del.quantity
               5, cm3/: 11,5...19
             1000H.: (10,5...20,5)
               1/min: 1400
4th speed
Del.quantity cm3/: -
1000H.: (42,5...52,5)
               1/min: 1300
5th speed
Del.quantity cm3/: 68,5...71,5
1000H.: (67,0...73,0)
               1/min: 1000
6th speed
Del.quantity cm3/: -
1000H.: (74,0...80,0)
              1/min: 700
7th speed
Del.quantity cm3/: /1,0....76,7)
               1/min: 500
8th speed
               cm3/: 65,0...68,0
Del.quantity
               1000H: (62,8...70,2)
Zero delivery (stop):
                                  P. . . . . !
Mech. shutoff:
              1/min: 1300
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
              1/min: 300
1st speed
Del.quantity cm3/: -
1000H.: (16,5..26,5)
              1/min: 350
2nd speed
Del.quantity cm3/: 4,5...10,5
1000H.: (3,5...12,5)
              1/min: 400
3rd speed
Del.quantity cm3/: ~
             1000H.: 0...2,5
Automatic starting fuel delivery:
              1/min: 180
1st speed
Del.quantity cm3/: -
               1000H: 90,0
 ind.
2nd speed
              1/min: 250
Del.quantity cm3/: -
              1000H: 60,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
                    : 10,0
Rated voltage
                    : 12,0
Mounting and assembly dimensions:
```

D25

Designation mm KF : K-0T mm MS mm : 1,2..1,45 : 2,2 : 17,0...19,0 SVS max. mm XK mm : 10.6...14,0 XL. mm

Remarks:

Note inst. in remarks column

Test sheet : PER 6.0 B1 Fdition : 15.12.86 Edition replaces : 15.12.86

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1300 R247-2 Type number : 0 460 426 097

Customer-specific information Customer : PERKINS

: NA6.60 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0.2

Calibrating nozzle-holder

assembly : 1 688 901 020

Opening

pressure bar : 172...175

Perforated-plate

diameter mm: 0.6

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm : 840 x Length

Start of delivery

Prestroke mm: 0,5 (from BDC): +-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1100 Speed Setting value mm: 1,8...2,2

Supply-pump pressure:

Speed 1/min: 1100

Setting value bar: 5,2...5,8

```
Full-load del. w/out charge press.:
                                                        Delivery-quant. and breakaway char.:
                                                         1st speed
Speed
              1/min : 1000
                                                                       1/min: 1530
                                                        Del.quantity cm3/: -
1000H.: 0...2,5
Del.quantity cm3/
              1000H.: 76,5...77,5 cm3/: 3,5
                                                         3rd speed
                                                                        1/min: 1480
Dispersion
                                                        Del.quantity cm3/: 11.5...19.5
1000H.: (10.5...20.5)
              1000H.: (4,5)
                                                        4th speed 17min...

Del.quantity cm3/: -
1000H.: (42,5...52,5)

5th speed 1/min: 1300
                                                                        1/min: 1400
Low-idle speed regulation:
Speed
               1/min: 300
Del.quantity
               cm3/
              1000H.: 19.5...23,5 cm3/: 3,5
                                                        Del.quantity cm3/: 68,5...71,5
1000H.: (67,0...73,0)
Dispersion
                                                                        1/min: 1000
              1000H.: (4,5)
                                                         6th speed
                                                        Del.quantity cm3/: -
1000H.: (74,0...80,0)
7th speed 1/min: 700
Full-load speed regulation:
               1/min: 1400
                                                         7th speed
Speed
                                                        Del.quantity cm3/: 71,8...74,2
1000H.: (69,3...76,7)
Del.quantity
                cm3/
               1000H: 44,5...50,5
                                                                        1/min: 500
                                                         8th speed
                                                        Del.quantity cm3/: 65,0...68,0
Start:
                                                                        1000H: (62,8...70,2)
               1/min: 100
Speed
                                                        Zero delivery (stop):
Del.quantity mind.
         cm3/1000H.: 80,0
                                                        Mech. shutoff:
                                                                        1/min: 1300
Inspection-pump test specifications
                                                        Speed
                                                        Del.quantity cm3/: - 1000H.
Test specifications in parentheses
                                                         Idle delivery:
Timing-device characteristic:
                                                                        1/min: 300
1st speed
               1/min: 950
                                                        1st speed
                                                        Del.quantity cm3/: -
1000H.: (16,5..26,5)
                  mm: 0,6...1,2
TD travel
                  mm: (0,2...1,6)
                                                                       1/min: 350
2nd speed
               1/min: 1100
                                                        2nd speed
                                                        Del.quantity cm3/: 4,5...10,5
1000H.: (3,5...12,5)
TD travel
                  mm:
                  mm: (1,3...2,7)
                                                                        1/min: 400
               1/min: 1300
                                                        3rd speed
3rd speed
                  mm: 2,8...3,6
mm: (2,5...3,9)
                                                        Del.quantity cm3/: -
1000H.: 0...2,5
TD travel
                                                        Automatic starting fuel delivery:
Supply-pump pressure characteristic:
1st speed
               1/min: 500
                                                        1st speed
                                                                        1/min: 180
                                                        Del.quantity cm3/: -
Supply-pump
                                                                        1000H: 90,0
                 bar: 2,7....3,3
                                                          ind.
pressure
               1/min: 1300
2nd speed
                                                        2nd speed
                                                                        1/min: 250
Supply-pump
                                                                        cm3/:
                 bar: 6,1...6,7
                                                        Del.quantity
pressure
                                                                       1000H: 60,0
                                                         ax.
Overflow quantity at overflow valve:
                                                        Shutoff electromagnet:
               1/min: 500
1st speed
                                                        Cut-in
Oveflow
                     : 41...83
            cm3/10s: (26...98)
 quantity
                                                         min. voltage
               1/min: 1300
                                                        Rated voltage
2nd speed
Over flow
                     : 55...138
 quantity cm3/10s: (40...153)
                                                        Mounting and assembly dimensions:
D27
```

Designation K KF MS SVS max. XK XL mm : mm : K-0T
mm : 1,2..1,45
mm : 2,2
mm : 17,0...19,0
mm : 10.6...14,0

Remarks:

Note inst. in remarks column

Test sheet : STE 6,5K2 Edition replaces : 16.12.86

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1200 R265 Type number : 0 460 426 099

: 0 460 426 099 Type number

Customer-specific information Customer : STEYR

: WD 612.61 Engine

Power k: 100

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

pressure bar : 147...150

Test in i. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 800 Setting value mm: 2,3...2,7

Supply-pump pressure:

Speed 1/min: 800

Setting value bar: 5,9...6,5

Full-load del. w/out charge press.:

Speed 1/min : 1000

Del.quantity cm3/ 1000H.: 83,0...84,0

Dispersion cm3/: 3,5	3rd speed 1/min: 1300
1000H.: (4,5)	Del.quantity cm3/: -
1	1000H.: (13,023,0)
Low-idle speed regulation:	4th speed 1/min: 1200
	Del.guantity cm3/: 80.583.5
Speed 1/min: 300 1	1000H.: (79.085.0)
Del.quantity cm3/	5th speed 1/min: 1000
1000H.: 13,023,0	Del.quantity cm3/: -
Dispersion cm3/: 3,5	1000H.: (80,586,5)
1000H.: (4,5)	6th speed 1/min: 800
Full-load speed regulation:	Del.quantity cm3/: 80,282,8
i i i i i i i i i i i i i i i i i i i	1000H.: (78,385,2)
Speed 1/min: 1300	7th speed 1/min: 500
Del.quantity cm3/	Del.quantity cm3/: 76,579,5
1000H: 15,021,0	1000H.: (74,381,7)
Start:	Zero delivery (stop):
. 1	, ,
Speed 1/min: 100 I	Mech. shutoff:
Del.quantity mind.	Speed 1/min: 1200
cm3/1000H.: 90 ₂ 0	Del.quantity cm3/: -
	1000н.
Inspection-pump test specifications	·.
Test specifications in parentheses	Idle delivery:
	, ·
1	1st speed 1/min: 300
Timing-device characteristic:	Del.quantity cm3/: -
1	Del.quantity cm3/: - 1000H.: (13,023,0)
1st speed 1/min: 600	2nd speed 1/min: 350
TD travel mm: 0,81,4	Del.quantity cm3/: 1,07,0
mm: (0,41,8)	1006H.: -
2nd speed 1/min: 800	3rd speed 1/min: 400
TD travel mm: -	Del.quantity cm3/: -
mm: (1,83,2)	1000H.: 02,5
3rd speed 1/min: 1200	
TD travel mm: 2,83,6	Automatic starting fue! delivery:
mm: (2,53,9)	ratematic otal ting last devices y
	1st speed 1/min: 170
Supply-pump pressure characteristic:	Del.quantity cm3/: -
to apply paint pressure endracter isere.	ind. 1000H: 90,0
1st speed 1/min: 600	100011. 7070
Supply-pump	2nd speed 1/min: 250
pressure bar: 5,05,6	Del.quantity cm3/: -
2nd speed 1/min: 1200	ax. 1000H: 65,0
Supply-pump	100011. 05,0
pressure bar: 7,68,2	Shutoff electromagnet:
pressure bar. 1,0.1.0,c	ond corrected on agrice.
Overflow quantity at overflow valve:	Cut-in
to the quarterey at over the variety	min. voltage : -
1st speed 1/min: 500	Rated voltage : -
1st speed	nated vortage .
quantity cm3/10s: (2698)	Mounting and assembly dimensions:
	mountaing and assembly dimensions.
	Designation
	Designation K mm : 3,23,4
quantity cm3/10s: (40153)	
Delivery march and breakers, than	
Delivery-quant. and breakaway char.:	
1st speed 1/min: 1330	SVS max. mm : 5,2
Del.quantity cm3/: -	Pamanks:
1000H.: 02,5	Remarks:

Note inst. in remarks column

Test sheet : CUM 5,9 L4 Edition : 11.12.86 Edition replaces : 11.12.86

Calibrating oil : ISO 4113

Injection pump : VE 6/12F1250 R173-8 Type number : 0 460 426 101

Customer-specific information Customer : CUMMINS

Engine : 6BTA-5.9

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. OC

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 027

Opening |

pressure bar : 250...253

Perforated-plate

diameter mm: 0.5

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm: 840

Start of delivery

Prestroke mm: 0,3

(from BDC): +-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 750 Charge press. hPa: 1000 Setting value mm: 1,4...1,8

Supply-pump pressure:

Speed 1/min: 750 Charge press. hPa: 1000

```
Setting value bar: 3,2...3,8
                                                                  Charge press. hPa: 1000
                                                                  Supply-pump
Full-load del. with charge press.:
                                                                                   bar: 2,1...2,7
1/min: 1050
                                                                   pressure
                                                                  2nd speed
                                                                                      hPa: 1000
Speed
                  1/min: 750
                                                                  Charge press.
Charge press. hPa: 1000
                                                                  Supply-pump
Del.quantity cm3/
1000H.: 84,0...87,5
                                                                                      bar: 4,3...4,9
                                                                   pressure
                cm3/: 4,0
1000H: (4,5)
Dispersion
                                                                  Overflow quantity at overflow valve:
                                                                                   1/min: 500
                                                                  1st speed
Full-load del. w/out charge press.:
                                                                  Charge press. hPa:
                                                                  Oveflow
                                                                                            41...83
                1/min : 500
                                                                   quantity cm3/10s: (26...98)
Del.quantity cm3/
                                                                                  1/min: 1250
                                                                  2nd speed
                1000H.: 41....42,0
                                                                  Charge press. hPa: 1000
                                                                  Overflow
                                                                                         : 55...138
                                                                   quantity cm3/10s: (40...153)
Low-idle speed regulation:
                                                                  Delivery-quant. and breakaway char.: 1st speed 1/min: 700
                  1/min: 375
Speed
Charge press. hPa: -
Del.quantity cm3/
1000H.: 8,0...14,0
                                                                  Charge-air pressure-setting
                                                                   point
                                                                                      hPa: 450
                                                                  Del.quantity cm3/: 68.0...69.0
1000H.: (65.5...71.5)
                   cm3/: 5,5
Dispersion
                1000H.: -
                                                                                   1/min: 1400
Full-load speed regulation:
                                                                  2nd speed
                                                                 Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...3,0
3rd speed 1/min: 1370
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...15,0
                  1/min: 1300
Speed
Charge press. hPa: 1000
Deliquantity cm3/
                  1000H: 61,0...67,0
Start:
                                                                                   1/min: 1330
                                                                  4th speed
                                                                 Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: 0...15,0
                 1/min: 100
Speed
Deliquantity mind.
           cm3/1000H.: 70.0
                                                                 5th speed 1/min: 1300
Charge press. hPa: 1000
Del.quantity cm3/: -
1000H.: (59,0...69,0)
6th speed 1/min: 1250
Inspection-pump test specifications
Test specifications in parentheses
                                                                 Charge press. hPa: 1000
Del.quantity cm3/: 75,0...78,0
1000H.: (73,5...79,5)
7th speed 1/min: 1050
Charge press. h%: 1000
Del.quantity cm3/: 80,5...83,5
1000H.: (79,0...85,0)
8th speed 1/min: 750
Charge press. hPa: 1000
Timing-device characteristic:
                 1/min: 600
1st speed
Charge press. hPa: 1000
                     mm: 0,4...1,2
TD travel
                     mm: (0,1...1,5)
                 1/min: 750
2nd speed
Charge press. hPa: 1000
                                                                  Charge press. hPa: 1000
TD travel
                     mm: -
                 mm: (0,9...2,3)
1/min: 1050
                                                                 Del.quantity cm3/: -
                                                                                   1000H: (81,5...87,5)
1/min: 500
3rd speed
Charge press. hPa: 1000
                                                                  9th speed
                                                                 Charge press. hPa: 1000
Del.quantity cm3/: 84.5...92.5
1000H: (84.8...92.2)
                     mm: 2,3...3,1
mm: (2,0...3,4)
TD travel
                                                                                   1/min: 500
Supply-pump pressure characteristic:
                                                                  10th speed
                                                                  Charge press. hPa: -
1st speed 1/min: 500
```

E05

```
Del.quantity cm3/: -
              1000H: (38,5...44,5)
Zero delivery (stop):
Mech. shutoff:
              1/min: -
Speed
Del.quantity cm3/: - 1000H.
Electr. shutoff:
              1/min: 375
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
             1/min: 375
1st speed
Del.quantity cm3/: -
1000H.: (6,0...16,0)
2nd speed
              1/min: 500
Del.quantity cm3/: -
1000H.: 0...4,0
Automatic starting fuel delivery:
             1/min: 200
1st speed
Del.quantity cm3/: -
              1000H: 60,0
 ind.
2nd speed
              1/min: 350
Del.quantity cm3/: -
              1000H: 60,0
 ax.
Shutoff electromagnet:
Cut-in
min. voltage
Rated voltage
Mounting and assembly dimensions:
Designation
               mm
                   : 5,1...5,4
: 1,3..1,55
: 2,2
: 18,8...20,8
KF
               mm
MS
               mm
SVS max.
               mm
XK
               mm
XL
                   : 12,9...16,3
               mm
Correction at adjusting nut (46)
```

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : PEU 1,7 A : 16.12.86 Edition : 9.85 replaces : ISO 4113 Calibrating oil : VE 4/8F2300 R171 Injection pump : 0 460 484 010 Type number Customer-specific information Customer : PEUGEOT : XUD 7 Engine TEST BENCH REQUIREMENTS Calibrating-oil oC return temp. with thermometer : 40...48 : 42...50 electronically Inlet press., bar: 0.2 Calibrating nozzle-holder : 1 688 901 022 assembly Opening bar: 130...133 pressure Test inj. tubing : 1 680 750 073 Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length Injection-pump setting values Test specifications in parentheses Timing-device travel: 1/min: 1250 Setting value mm: 3,4...3,8 Supply-pump pressure: 1/min: 1250 Speed Setting value bar: 4,3...4,9 Full-load del. w/out charge press.: Speed 1/min : 1250 Del.quantity cm3/ 1000H.: 28,0...29,0 cm3/: 2,5

Low-idle speed regulation: 1/min: 375 Speed Del.quantity cm3/ 1000H.: 8,0...12,0 cm3/: 2.0 1000H.: (3.0) Dispersion Residual-Delivery Setting 1/min: 550 Del.quantity cm3/ 1000H.: 3,5...4,5 Full-load speed regulation: 1/min: 2400 Speed Del.quantity cm3/ 1000H: 19,0...25,0 Start: Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 42.0 Load-dependent start of delivery: 1/min: 1250 Speed Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1st speed 1/min: 800 TD travel mm: 0,8...1,6 mm: (0,5...1,9) 1/min: 1250 2nd speed TD travel mm: mm: (2,9...4,3)1/min: 2000 3rd speed mm: 7,5...8,3 mm: (7,2...8,6) TD travel Supply-pump pressure characteristic: 1/min: 800 1st speed Supply-pump bar: 3,0...3,6 pressure 1/min: 1250 2nd speed Supply-pump pressure bar: 4,3...4,9 3rd speed 1/min: 2000 Supply-pump pressure bar: 6,4...7,0 Overflow quantity at overflow valve:

1/min: 800

1st speed

Dispersion

1000H.: -

: 41...83 Oveflow quantity cm3/10s: (26...98) 1/min: 2300 2nd speed : 55..138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1/min: 2650 1st speed Del.quantity cm3/: -1000H.: 0...7,0 1/min: 2500 3rd speed Del.quantity cm3/: 11,5...17,5 1000H.: (10,5...18,5) 4th speed 1/min: 2400 Del.quantity cm3/: 1000H.: (18,0...26,0)
Sth speed 1/min: 2250
Del.quantity cm3/: 27,0...29,0
1000H.: (25,8...30,2) 6th speed 1/min: 2000 Del.quantity cm3/: 27,5...29,5 1000H.: (26,3...30,7) 1/min: 1250 7th speed Del.quantity cm3/: 1000H.: (26,3...30,7)
8th speed 1/min: 800 Del.quantity cm3/: 28,0...30,0 1000H: (26,8...31,2) 1/min: 500 9th speed Del.quantity cm3/: 28,0...31,0 1000H: (26,5...32,5) Zero delivery (stop): Mech. shutoff: 1/min: 2300 Speed Del.quantity cm3/: - 1000H. Idle delivery: 1st speed 1/min: 375 Del.quantity cm3/: -1000H.: (6,0...14,0) High Idle: 1/min: 450 Speed Del.quantity cm3/: 8,0...12,0 1000H.: (6,0...14,0) Residual: Speed 1/min: 550 Del.quantity 1000H.: 0....8,0 Automatic starting fuel delivery: 1/min: 200 1st speed Del.quantity cm3/: ind. 1000H: 44,0

2nd speed 1/min: 300 Del.quantity cm3/: ax. 1000H: 34,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4
KF mm : 5,2...5,5
MS mm : 1,3...1,5
SVS max. mm : 3,0
XK mm : 18,9...20,9
XL mm : 12,2...15,6

Setting of residual delivery.

Idle setting (LFG) according to VDT-I-460/135.

```
BOSCH-INJ.-PUMP TEST SPECIFICATIONS
                                                                  1/min: 400
                                                    Speed
                                                    Del.quantity cm3/
1000H.: 14,5...16,5
Note inst. in remarks column
                                                                   cm3/: 2,0
                                                    Dispersion
                   : VWW 1,3 A
                                                                 1000H.: (3,0)
Test sheet
                   : 02.04.87
Edition
                                                    Residual-Delivery Setting
                   : 4.86
replaces
                                                    Speed
                                                                  1/min: 575
                   : ISO 4113
Calibrating oil
                                                    Del.quantity cm3/
                                                                 1000H.: 2,5...3,5
                   : VE 4/8F2450 L212
                                                    Full-load speed regulation:
Injection pump
                   : 0 460 484 011
Type number
                                                    Speed
                                                                  1/min: 2600
Customer-specific information
                                                    Del.quantity cm3/
Customer
                                                                  1000H: 8,0...14,0
TEST BENCH REQUIREMENTS
                                                    Start:
Calibrating-oil
                                                    Speed
                                                                  1/min: 100
                                                    Del.quantity mind.
 return temp.
                  : 40...48
                                                            cm3/1000H.: 32.0
with thermometer
                   : 42...50
electronically
                                                    Inspection-pump test specifications
Inlet press., bar : 0.2
                                                    Test specifications in parentheses
Calibrating nozzle-holder
 assembly
                   : 1 688 901 000
                                                    Timing-device characteristic:
Opening
                                                    ist speed
                                                                  1/min: 1000
                                                                     mm: 2,0...2,8
mm: (1,7...3,1)
               bar: 147...150
                                                    TD travel
 pressure
                                                                  1/min: 1500
                                                    2nd speed
Test inj. tubing : 1 680 750 017
                                                    TD travel
                                                                     mm:
                                                                     mm: (4,0...5,4)
                                                                  1/min: 2000
Outside diameter
                  : 6
                                                    3rd speed
                                                    TD travel
                                                                     mm: 6,9...7,7
x Wall thickness
                                                                  mm: (7,6...8,0)
1/min: 2450
                mm: 840
x Length
                                                    4th speed
                                                    TD travel
                                                                     mm: 8,6...9,4
Injection-pump setting values
Test specifications in parentheses
                                                                     mm: (8,3...9,7)
                                                    Supply-pump pressure characteristic:
Timing-device travel:
              1/min: 1500
                                                    1st speed
                                                                  1/min: 600
Speed
Setting value mm: 4,5...4,9
                                                    Supply-pump
                                                                    bar: 3,1...4,1
                                                     pressure
                                                                  1/min: 2450
Supply-pump pressure:
                                                    2nd speed
                                                    Supply-pump
                                                                    bar: 7,7...8,5
              1/min: 1500
Speed
                                                     pressure
Setting value bar: 5,4...6,0
                                                    Overflow quantity at overflow valve:
Full-load del. w/out charge press.:
                                                    1st speed
                                                                  1/min: 600
                                                                       : 55...70
             1/min : 1500
                                                    Oveflow
Speed
Del.quantity cm3/
1000H.: 23,5...24,5
Dispersion cm3/: 2,0
                                                                cm3/10s: (50...75)
1/min: 2450
                                                     quantity
                                                    2nd speed
Overflow
                                                                       : 82...112
             1000H.: (3,0)
                                                     quantity cm3/10s: (77...117)
                                                    Delivery-quant. and breakaway char.:
Low-idle speed regulation:
E09
```

```
1st speed
                1/min: 2800
Del.quantity cm3/: -
                1000H.: 0...6,0
                 1/min: 2550
3rd speed
Del.quantity cm3/: 10,5...20,5
1000H.: (9,5...21,5)
                 1/min: 2600
4th speed
Del.quantity cm3/: -
1000H.: (7,0...15,0)

5th speed 1/min: 2450

Del.quantity cm3/: 19,0...21,0
1000H.: (17,8...22,2)

6th speed 1/min: 1500
Del.quantity cm3/: -
1000H.: (21,8...26,2)
7th speed
                1/min: 600
Del.quantity cm3/: 15.0...18.0
1000H.: (13.5...19.5)
Zero delivery (stop):
Mech. shutoff:
Speed
                1/min: -
Del.quantity cm3/: - 1000H.
Electr. shutoff:
Speed
                 1/min: 450
Del.quantity cm3/: -
                1000H.
Idle delivery:
1st speed
                 1/min: 400
Del.quantity cm3/: -
1000H.: (11,5..19,5)
                1/min: 450
2nd speed
Del.quantity cm3/: 5.5...8.5
1000H.: (3,0...11,0)
Residual:
Speed 1/min: 525
Del.quantity: 2,3...4,3
1000H.: (0,8...5,8)
Automatic starting fuel delivery:
                 1/min: 250
1st speed
Del.quantity cm3/: -
                 1000H: 25,0
 ind.
2nd speed
                 1/min: 400
Del.quantity cm3/: -
                 1000H: 28,0
 ax.
Shutoff electromagnet:
Cut-in
                       : 10,0
 min. voltage
                       : 12,0
Rated voltage
```

E10

Mounting and assembly dimensions:

Designation

K mm : 3,2...3,4 KF mm : 5,7...6,0 MS mm : 1,3...1,5 SVS max. mm : 4,9

Remarks:

Setting of residual delivery.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Note inst. in remarks column 1/min: 350 Speed Del.quantity cm3/ 1000H.: 9,0...13,0 Test sheet : FIA 1,3H5 cm3/: 2,5 Edition : 18.12.86 Dispersion replaces 1000H.: Calibrating oil : ISO 4113 Full-load speed regulation: : VE 4/8F2000 R61-1 1/min: 2100 Injection pump Speed Type number : 0 460 484 012 Del.quantity cm3/ 1000H: 11,5...18,5 Customer-specific information Customer : FIAT PANDA Start: Engine : X8/29 1/min: 100 Speed Del.quantity mind. cm3/1000H.: 28,0 TEST BENCH REQUIREMENTS Calibrating-oil CC Load-dependent start of delivery: return temp. with thermometer : 40...48 Speed 1/min: 1600 : 42...50 electronically Inspection-pump test specifications Test specifications in parentheses Inlet press., bar: 0.2 Calibrating nozzle-holder assembly : 1 688 901 000 Timing-device characteristic: Opening 1/min: 600 1st speed mm: 0,5...1,3 bar: 147...150 TD travel pressure mm: (0,2...1,6)1/min: 1600 2nd speed Test inj. tubing : 1 680 750 017 TD travel mm: mm: (4,3...5,7) 1/min: 2000 Outside diameter : 6 3rd speed mm: 6,2...7,0 mm: (5,9...7,3) x Wall thickness : 2 TD travel mm: 840 x Length Injection-pump setting values Supply-pump pressure characteristic: Test specifications in parentheses 1/min: 600 1st speed Timing-device travel: Supply-pump bar: 3,3...3,9 pressure 1/min: 2000 1/min: 1600 2nd speed Setting value mm: 4,8...5,2 Supply-pump bar: 7,7...8,3 pressure Supply-pump pressure: Overflow quantity at overflow valve: 1/min: 1600 Speed 1/min: 500 Setting value bar: 6,4...7,0 1st speed Oveflow : 41...83 cm3/10s: (26...98) 1/min: 2000 Full-load del. w/out charge press.: quantity 2nd speed Over flow : 55...138 1/min: 1200 Speed Del.quantity cm3/ quantity cm3/10s: (40...153) 1000H.: 22,5...23,5 cm3/: 2,5 Dispersion Delivery-quant. and breakaway char.: 1000H.: -1st speed 1/min: 2300 E11

```
Del.quantity cm3/: -
1000H.: 0...2,0
3rd speed 1/min: 2150
Del.quantity cm3/: 5.0...11.0
1000H.: (4.0...12.0)
4th speed 1/min: 2100
Del.quantity 00007
Del.quantity cm3/: -
                1000H.: (11,0...19,0)
                 1/min: 2000
5th speed
Del.quantity cm3/: 18,2...20,8

1000H.: (17,3...21,7)

6th speed 1/min: 1600

Del.quantity cm3/: 19,3...21,8

1000H.: (18,3...22,7)

7th speed 1/min: 1200
Del.quantity cm3/: -
                1000H.: (20,8...25,2)
                 1/min: 600
8th speed
Del.quantity cm3/: 18,5...21,5
1000H: (17,0...23,0)
Zero delivery (stop):
Mech. shutoff:
                1/min: -
Speed
Del.quantity cm3/: -
                1000H.
Electr. shutoff:
                 1/min: 2000
Speed
ELAB
                  volt: -
Del.quantity cm3/: -
                1000H.
Idle delivery:
                1/min: 350
1st speed
Del.quantity cm3/: -
1000H.: (7,0...15,0)
2nd speed
                 1/min: 450
Del.quantity_cm3/: -
                1000H.: 0...4,0
                 1/min: 550
3rd speed
Del.quantity cm3/: -
                1000H.: 0...2,0
Automatic starting fuel delivery:
                 1/min: 350
1st speed
Del.quantity cm3/: -
                 1000H: 26,0
 ind.
2nd speed
                 1/min: 450
Del.quantity cm3/: -
                 1000H: 26,0
Shutoff electromagnet:
Cut-in
 min. voltage
                       : 10,0
```

E12

Rated voltage : 12,0

Mounting and assembly dimensions:

Designation
K mm : 3,2...3,4
KF mm : 6,1...6,2
MS mm : 1,4..1,65

mm

Remarks:

SVS max.

Note inst. in remarks column

Test sheet : PEU 2.0 D
Edition : 10.12.86
replaces : 10.84
Calibrating oil : ISO-4113

Injection pump : VE 4/9F2200 R69 Type number : 0 460 494 055

Customer-specific information Customer : RENAULT

Engine : J 8 S-702

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. OC

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0.2

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400 Charge press. hPa: 800 Setting value mm: 4,0...4,4

Supply-pump pressure:

Speed 1/min: 1400 Charge press. hPa: 800 Setting value bar: 5,1...5,7

Full-load del. with charge press.:

Speed 1/min: 1400 Charge press. hPa: 800 Del.quantity cm3/ 1000H.: 48,6...49,6 Dispersion cm3/: 2,5 Supply-pump bar: 1,9...2,5 1/min: 1800 pressure 2nd speed 1000H : (3.0) hPa: 800 Charge press. Supply-pump Full-load del. w/out charge press.: pressure bar: 6,3...6,9 Speed 1/min : 600 Overflow quantity at overflow valve: Del.quantity cm3/ 1000H.: 37,6...38,6 1st speed 1/min: 600 Charge press. hPa: -Oveflow Low-idle speed regulation: quantity cm3/10s: (26...98) 2nd speed 1/min: 2200 1/min: 350 Charge press. hPa: -Charge press. hPa: 800 Deliquantity cm3/ Over flow : 55...138 1000H.: 9,0...13,0 cm3/: 2,5 1000H.: (3,0) quantity cm3/10s: (40...153) Dispersion Delivery-quant. and breakaway char.: 1st speed 1/min: 700 1st speed Full-load speed regulation: Charge-air pressure-setting 1/min: 2400 hPa: 200 point Speed mm: 4,5 Charge press. hPa: 800 LDA stroke Del.quantity cm3/: 42.1...43.1 1000H.: (39.6...44.8) Del.quantity cm3/ 1000H: 23,0...29,0 1/min: 2700 2nd speed Charge press. hPa: 800
Del.quantity cm3/: 1000H.: 0...2,0
3rd speed 1/min: 2500 Start: Speed 1/min: 100 Del.quantity mind. Charge press. hPa: 800
Del.quantity cm3/: 1000H.: 0...17,5 cm3/1000H.: 60,0 Inspection-pump test specifications Test specifications in parentheses 4th speed 1/min: 2400 Charge press. hPa: 800
Del.quantity cm3/: 1000H.: (22,0...30,0)
Sth speed 1/min: 2000 Timing-device characteristic: Charge press. hPa: 800 Del.quantity cm3/: 45.1...47.1 1000H.: (43.9...48.3) 1/min: 1000 1st speed Charge press. hPa: 800 mm: 1,9...2,7 mm: (1,6...3,0) TD travel 1/min: 1400 6th speed Charge press. hPa: 800
Del.quantity cm3/: 1000H.: (46,9...51,3)
7th speed 1/min: 1000
Charge press. hPa: 800
Del.quantity cm3/: 45,6...48,6
1000H.: (44,1...50,1)
9th speed 1/min: 600 1/min: 1400 2nd speed Charge press. hPa: 800 TD travel mm: mm: (3,5...4,9) 1/min: 1800 3rd speed Charge press. hPa: 800 mm: 5,7...6,5 TD travel 1/min: 600 mm: (5,4...6,8)9th speed 1/min: 2000 4th speed Charge press. hPa: -Del.quantity cm3/: -Charge press. hPa: 800 1000H: (35,9...40,3) mm: 6,2...7,0 mm: (5,9...7,3) TD travel Zero delivery (stop): Supply-pump pressure characteristic: Mech. shutoff: Speed 1/min: -1st speed 1/min: 400 Del.quantity cm3/: - 1000H. Charge press. hPa: 800

```
Electr. shutoff:
                1/min: 2200
Speed
ELAB
                 volt: -
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
                1/min: 480
Del.quantity cm3/: -
1000H.: 0...2,0
2nd speed 1/min: 375
Del.quantity cm3/: 4.0...8.0
1000H.: (2.0...10.0)
3rd speed 1/min: 350
Del.quantity cm3/: -
1000H.: (7,0...15,0)
Automatic starting fuel delivery:
               1/min: 180
1st speed
Del.quantity cm3/: -
                1000H: 40,0
 ind.
                1/min: 300
2nd speed
Del.quantity cm3/: -
                1000H: 40,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
                      : 10,0
Rated voltage
                     : 12,0
Mounting and assembly dimensions:
Designation
                     : 3,2-3,4
: 5,7-5,9
K
KF
                 mm
MS
                 mm
SVS max.
                tam
                     20,2-22,2
9,1-12,4
XK
                 mm
XL
                mm
Correction at adjusting nut (46)
 emarks:
```

```
BOSCH-INJ.-PUMP TEST SPECIFICATIONS
                                                   Low-idle speed regulation:
Note inst. in remarks column
                                                                 1/min: 400
                                                   Speed
                                                   Del.quantity cm3/
                                                                1000H.: 6,0...10,0
cm3/: 2,5
1000H.: (3,0)
                   : PEU 2,5 A
Test sheet
Edition
                   : 10.12.86
                                                   Dispersion
replaces
                   : 3.85
Calibrating oil
                   : ISO-4113
                                                   Full-load speed regulation:
Injection pump
                   : VE 4/9F2250 R84
                                                   Speed
                                                                 1/min: 2325
                                                   Del.quantity cm3/
1000H: 25,5...31,5
                   : 0 460 494 079
Type number
Customer-specific information
                   : PEUGEOT
Customer
                                                   Start:
                   : XD3 505 D
Engine
                                                                 1/min: 100
                                                   Speed
                                                   Del.quantity mind.
TEST BENCH REQUIREMENTS
                                                           cm3/1000H.: 45.0
Calibrating-oil C
                                                   Load-dependent start of delivery:
 return temp.
with thermometer: 40...48
                                                                 1/min: 1250
                                                   Speed
                  : 42...50
electronically
                                                   Inspection-pump test specifications
                                                   Test specifications in parentheses
Inlet press., bar: 0.2
Calibrating nozzle-holder
                   : 1 688 901 022
 assembly
                                                   Timing-device characteristic:
                                                                 1/min: 700
Opening
                                                   1st speed
 pressure bar : 130...133
                                                   TD travel
                                                                    mm: 0,6...1,4
                                                                    mm: (0,3...1,7)
                                                                 1/min: 1250
                                                   2nd speed
Test inj. tubing : 1 680 750 073
                                                   TD travel
                                                                    mm:
                                                                 mm: (3,5...4,9)
1/min: 2000
Outside diameter : 6
                                                   3rd speed
                                                                    mm: 8,1...8,9
mm: (7,8...9,2)
x Wall thickness : 2
                                                   TD traved
               mm: 450
x Length
                                                   Supply-pump pressure characteristic:
Injection-pump setting values
Test specifications in parentheses
                                                                 1/min: 400
                                                   1st speed
Timing-device travel:
                                                   Supply-pump
                                                                   bar: 2.1...2,7
                                                    pressure
                                                                 1/min: 2200
             1/min: 1250
                                                   2nd speed
Setting value mm: 4,0...4,4
                                                   Supply-pump
                                                                   bar: 7,5...8,1
                                                    pressure
Supply-pump pressure:
                                                   Overflow quantity at overflow valve:
             1/min: 1250
Speed
Setting value bar: 5,0...5,6
                                                                 1/min: 400
                                                   1st speed
                                                    Oveflow
Full-load del. w/out charge press.:
                                                   2nd speed
                                                                     : 55...138
                                                   Over flow
Speed
            1/min : 1250
Del.quantity cm3/
1000H.: 38,5...39,5
Dispersion cm3/: 2,5
1000H.: (3,0)
                                                    quantity cm3/10s: (40...153)
                                                   Delivery-quant. and breakaway char.:
                                                   1st speed 1/min: 2550
```

E16

```
Del.quantity cm3/: -
1000H.: 0...2,0
                 1/min: 2450
2nd speed
                 cm3/: 4,5...12,5
Del.quantity
                1000H.: (4,5...12,5
1/min: 2325
3rd speed
Tra speed

Del.quantity cm3/: -

1000H.: (24,5...32,5)

4th speed   1/min: 2200

Del.quantity cm3/: 39,0...41,0

1000H.: (37,8...42,2)
                 1/min: 2000
5th speed
Del.quantity cm3/: 38,5...40,5
1000H.: (37,3...41,7)
                 1/min: 1250
6th speed
Del.quantity cm5/: -
1000H.: (36,8...41,2)
7th speed
                 1/min: 600
Del.quantity cm3/: 35,5...38,5
1000H.: (34,0...40,0)
Zero delivery (stop):
Mech. shutoff:
                 1/min: -
Speed
Del.quantity cm3/: - 1000H.
Electr. shutoff:
Speed
                 1/min: 2250
ELAB
                  volt: -
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
                 1/min: 400
Del.quantity cm3/: -
1000H.: (4,0...12,9)
                 1/min: 440
2nd speed
Del.quantity cm3/: -
1000H.: 0...2,0
Automatic starting fuel delivery:
1st speed
                 1/min: 350
Del.quantity cm3/: -
                 1000H: 45,0
 ind.
                 1/min: 450
2nd speed
Del.quantity
                 cm3/: -
                 1000H: 45,0
 ax.
Shutoff electromagnet:
Cut-in
                       : 10,0
 min. voltage
Rated voltage
                       : 12,0
Mounting and assembly dimensions:
```

E17

Designation K mm 5,2-5,4 **KF** mm : 0,9-1,2 : 3,3 MS mm SVS max. mm : 20,2-22,2 : 9,9-13,3 XK mm XL mm

Remarks:

Note inst. in remarks column

Test sheet : REN 2.0 E
Edition : 02.04.87
replaces : 7.84
Calibrating oil : ISO-4113

Injection pump : VE 4/9F2400 R95 Type number : 0 460 494 105

Customer-specific information Customer : RENAULT

Engine : F8M

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.3

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400 Setting value mm: 4,1...4,5 KSB solenoid-operated

valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1400
Setting value bar: 4,9...5,5
KSB solenoid-operated
valve volt: 12,0

Full-load del. W/out charge press.:

Speed 1/min: 1000

```
Del.quantity cm3/
1000H.: 28,5...29,5
                                                                         mm: 6,3...7<sub>2</sub>1
                                                       TD travel
                                                                          mm: (6,0...7,4)
KSB solenoid-operated
                                                       KSB solenoid-operated
                volt: 12,0
cm3/: 2,5
                                                                      volt: 12.0
1/min: 2100
                                                        valve
Dispersion
                                                       5th speed
                                                                          mm: 6,7...7<sub>5</sub>5
              1000H.: -
                                                       TD travel
                                                                         mm: (6,4...7,8)
Low-idle speed regulation:
                                                       KSB solenoid-operated
                                                                      volt: 12.0
1/min: 2400
mm: 7.0...7.7
                                                        valve
               1/min: 425
Speed
                                                        6th speed
Del.quantity cm3/
1000H.: 6,0...10,0
                                                       TD travel
                                                                         mm: (6,6...8,0)
KSB solenoid-operated
                                                       KSB solenoid-operated
                volt: 12,0
                                                        valve
                                                                       volt: 12,0
Dispersion
                cm3/: 2,0
                                                       Mfg. date: from 1st speed 1/m
             1000H.:
                                                                      1/min: 300
Full-load speed regulation:
                                                                         mm: 2,0...4,0
                                                       TD travel
Speed
              1/min: 2550
                                                                          mm: -
Deliquantity cm3/
               1000H: 21,0...29,0
                                                       Supply-pump pressure characteristic:
KSB solenoid-operated
 valve
                volt: 12,0
                                                        1st speed
                                                                      1/min: 600
                                                       Supply-pump
Start:
                                                        pressure
                                                                        bar: 2,5...3,1
                                                       KSB solenoid-operated
                                                                      volt: 12,0
1/min: 2400
Speed
               1/min: 100
                                                        valve
Del.quantity mind.
cm3/1000H.: 42,0
                                                       2nd speed
                                                       Supply-pump
KSB solenoid-operated
                                                        pressure
                                                                        bar: 7,7...8,3
 valve
                                                       KSB solenoid-operated
                volt: 12.0
                                                        valve
                                                                       volt: 12,0
Load-dependent start of delivery:
                                                       Overflow quantity at overflow valve:
               1/min: 1400
KSB solenoid-operated
                                                                      1/min: 600
                                                       1st speed
                volt: 12,0
 valve
                                                       KSB solenoid-operated
                                                        valve
                                                                       volt: 12,0
                                                                            : 55...70
Inspection-pump test specifications
                                                       Oveflow
                                                         quantity cm3/10s: (50...75)
Test specifications in parentheses
                                                       2nd speed
                                                                      1/min: 2400
                                                       KSB solenoid-operated
                                                        valve volt: 12,0
overflow : 82...112
quantity cm3/10s: (77...118)
Timing-device characteristic:
                                                       Overflow
               1/min: 600
1st speed
TD travel
                  mm: 0,7...1,5
                  mm: (0,4...1,8)
                                                       Delivery-quant. and breakaway char.:
KSB solenoid-operated
                                                                      1/min: 2850
                                                       1st speed
               volt: 12,0
 valve
                                                       KSB solenoid-operated
              1/min: 1000
                                                                       volt: 12,0
2nd speed
                                                        valve
                                                       Del.quantity cm3/: -
1000H.: 0...7,0
                  mm: 2,3...3,1
mm: (2,0...3,4)
TD travel
KSB solenoid-operated
                                                                      1/min: 2700
                                                       2nd speed
              volt: 12,0
1/min: 1400
                                                       KSB solenoid-operated
 valve
                                                       valve volt: 12.0
Del.quantity cm3/: 10.5...16.5
1000H.: (9.5...17.5)
3rd speed
TD travel
                  mm: -
                  mm: (3,6...5,0)
KSB solenoid-operated
                                                       3rd speed
                                                                      1/min: 2550
               volt: 12,0
 valve
                                                       KSB solenoid-operated
              1/min: 2000
                                                        valve
                                                                       volt: 12,0
4th speed
E19
```

```
Del.quantity cm3/: 21,0...29,0
1000H.: (21,0...29,0)
                1/min: 2400
4th speed
KSB solenoid operated
                  volt: 12,0
 valve
Del.quantity cm3/: 29,7...32,3
1000H.: (28,7...33,3)
5th speed 1/min: 2100
5th speed
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 20,3...32,7
1000H.: (29,2...33,8)
                1/min: 1400
6th speed
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 27,8...29,8
1000H.: (26,5...31,1)
7th speed 1/min: 1000
KSB solenoid-operated
                 volt: 12,0
 valve
Del.quantity cm3/: -
               1000H.: (26,7...31,3)
                1/min: 600
8th speed
KSB solenoid-operated
                 volt: 12,0
 valve
Del.quantity cm3/: 26,9...29,9
1000H: (25,4...31,4)
Zero delivery (stop):
Mech. shutoff:
Speed
                1/min: -
Del.quantity cm3/: -
               1000H.
Electr. shutoff:
                1/min: 425
Speed
ELAB
                 volt:
Del.quantity cm3/: 3
               1000H.
Idle delivery:
1st speed
                1/min: 425
KSB solenoid-operated
                 volt: 12,0
 valve
Del.quantity cm5/: -
1000H.: (4,0...12,0)
                1/min: 600
2nd speed
KSB solenoid-operated
valve volt: 12.0
Del.quantity cm3/: 0.5...5.5
1000H.: (0...6.0)
                1/min: 650
3rd speed
KSB solenoid-operated
                 volt: 12,0
 valve
Del.quantity cm3/: -
               1000H.: 0...3,0
Automatic starting fuel delivery:
```

1st speed 1/min: 330 KSB solenoid-operated volt: 12.0 valve Del.quantity cm3/: -1000H: 30,0 ind. 1/min: 500 2nd speed KSB solenoid-operated volt: 12,0 valve Del.quantity cm3/: 1000H: 31,0 ax. Shutoff electromagnet: Cut-in min, voltage : 10,0

Rated voltage : 12,0

Designation : 3,2...3,4 : 5,7...5,9 K mm **KF** mm : 1,2...1,4 MS mm : 2,8 SVS max. mm : 18,7..20,7 : 9,5...12,8 XK mm

mm

Mounting and assembly dimensions:

Remarks:

XL

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : PEU 2,3 K : 3.10.86 Edition replaces : 9.85 Calibrating oil : ISO-4113 : VE 4/9F2075 R126 Injection pump Type number : 0 460 494 121 Customer-specific information Customer : PEUGEOT Engine : XD 3S TEST BENCH REQUIREMENTS Calibrating-oil oC return temp. with thermometer: 40...48 electronically : 42...50 Inlet press., bar: 0.2 Calibrating nozzle-holder : 1 688 901 022 assembly Opening bar : 130...133 pressure Test inj. tubing : 1 680 750 073 Outside diameter : 6 x Wall thickness : 2 x Length mm : 450 Injection-pump setting values Test specifications in parentheses Timing-device travel: 1/min: 1500 Charge press. hPa: 800 Setting value mm: 5,8-6,2 Supply-pump pressure: 1/min: 1500 Speed Charge press. hPa: 800 Setting value bar: 5,6-6,2 Full-load del. with charge press.: Speed 1/min: 1500

Del.quantity cm3/ 1000H.: 53_5-54,5 cm3/: 2,5 Dispersion 1000H: -Full-load del. W/out charge press.: 1/min : 500 Del.quantity cm3/ 1000H.: 40,0-41,0 Low-idle speed regulation: Speed 1/min: 350 Del.quantity cm3/ 1000H.: 20,0-24,0 cm3/: 2.0Dispersion 1000H.: Full-load speed regulation: Speed 1/min: 2300 Charge press. hPa: 800 Deliquantity cm3/ 1000H: 26,5-32,5 Start: 1/min: 100 Speed Del.quantity mind. cm3/1000H.: 67,0 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1st speed 1/min: 750 Charge press. hPa: 800 TD travel mm: 0,8-1,6 mm: (0.5-1.9)1/min: 1000 2nd speed Charge press. hPa: 800 mm: 2,5-3,3 mm: (2,2-3,6) 1/min: 1500 TD travel 3rd speed Charge press. hPa: 800 TD travel mm: mm: (5,3-6,7)1/min: 2000 4th speed Charge press. hPa: 800 mm: 7_8-8_6 TD travel mm: (7, 5-8, 9)Supply-pump pressure characteristic: 1st speed 1/min: 200 hPa: 800 Charge press. Supply-pump bar: 1,4-2,0 pressure

Charge press. hPa: 800

2nd speed 1/min: 750 Zero delivery (stop): Charge press. hPa: 800 Supply-pump Mech. shutoff: bar: 3,4-4,0 Speed 1/min: pressure 1/min: 2000 3rd speed Del.quantity cm3/: -1000H. Charge press. hPa: 800 Supply-pump bar: 7,1-7,7 pressure Electr. shutoff: 1/min: 400 Speed ELAB Overflow quantity at overflow valve: volt: -Del.quantity cm3/: -1000H. 1st speed 1/min: 500 Charge press. hPa: -Oveflow : 41-83 Idle delivery: quantity cm3/10s: (26-98) 2nd speed 1/min: 2075 1st speed 1/min: 350 Del.quantity cm3/: -1000H.: (18,0-26,0) Charge press. hPa: 800 Over flow : 55-138 quantity cm3/10s: (40-153) 2nd speed 1/min: 400 Del.quantity cm3/: 8,0-12,0 1000H.: (6,0-14,0) Delivery-quant. and breakaway char.: 1/min: 500 1/min: 750 1st speed 3rd speed Del.quantity cm3/: -1000H.: 0...1,0 Charge-air pressure-setting hPa: 300 point LDA stroke mm: 4,5
Del.quantity cm3/: 47,5-48,5
1000H.: (45,8-50,2)
2nd speed 1/min: 2600 Automatic starting fuel delivery: 1st speed 1/min: 230 Charge press. hPa: 800 Del.quantity cm3/: Del.quantity cm3/: -1000H.: 0...1,0 ind. 1000H: 60,0 3rd speed 1/min: 2300 2nd speed 1/min: 330 Charge press. hPa: 800 Del.quantity cm3/: · Del.quantity cm3/: 26,5-32,5 1000H.: (25,5-33,5) 1000H: 60,0 1/min: 2200 4th speed Shutoff electromagnet: Charge press. hPa: 800 Del.quantity cm3/: 39,5-45,5 1000H.: (38,5-46,5) Cut-in : 10,0 min. voltage 1/min: 2000 5th speed : 12.0 Rated voltage Charge press. hPa: 800 Del.quantity cm3/: 52,0-54,0 1000H.: (50,8--55,2) 6th speed 1/min: 1500 Charge press. hPa: 800 Mounting and assembly dimensions: Designation : K1 mm Del.quantity cm3/: -1000H.: (51,8-56,2) KF : 5,4-5,7 mm 4ر1-2ر1 : MS mm : 4,6 1/min: 1000 SVS max. 7th speed mm : 20_2-22,2 Charge press. hPa: 800 XK mm cm3/: 50,5-53,5 : 9,7-13,1 Deliquantity XL mm 1000H.: (49,8-54,2) 1/min: 750 8th speed Correction at adjusting nut (46) hPa: Charge press. Del.quantity cm3/: 41,5-44,5 1000H: (40,8-45,2) 1/min: 500 9th speed Charge press. hPa: -Del.quantity cm3/: 40,0-41,0

1000H: (38,3-42,7)

Del.quantity cm3/ 1000H.: 29,5...30,5 BOSCH-INJ.-PUMP TEST SPECIFICATIONS KSB solenoid-operated Note inst. in remarks column volt: 12.0 cm3/: 2,5 Dispersion Test sheet : FOR 1.6 A 1000H.: -Edition : 2.10.86 replaces : 6.85 Low-idle speed regulation: : ISO-4113 Calibrating oil 1/min: 440 Speed Del.quantity cm3/ 1000H.: 7,0...11,0 : VE 4/9F2400 R125 Injection pump : 0 460 494 122 Type number KSB solenoid-operated Customer-specific information volt: 12.0 Customer : FORD-KENT cm3/: 2,0 Dispersion 1000H.: Engine : 1,6L IDI Full-load speed regulation: TEST BENCH REQUIREMENTS Speed 1/min: 2675 Del.quantity cm3/ Calibrating-oil C 1000H: 7,5...13,5 return temp. KSB solenoid-operated with thermometer : 40...48 valve volt: 12.0 : 42...50 electronically Start: Inlet press., bar: 0.2 1/min: 100 Speed Del.quantity mind. cm3/1000H.: 50,0 Calibrating nozzle-holder : 1 688 901 022 assembly KSB solenoid-operated / volt: 12,0 Opening valve bar : 130...133 pressure Inspection-pump test specifications Test specifications in parentheses Test inj. tubing : 1 680 750 073 Outside diameter : 6 Timing-device characteristic: x Wall thickness : 2 mm: 450 1/min: 800 x Length 1st speed mm: 1,6...2,4 TD travel Injection-pump setting values mm: (1,3...2,7)Test specifications in parentheses KSB solenoid-operated volt: 12.0 1/min: 1500 valve 2nd speed Timing-device travel: TD travel mm: 1/min: 1500 mm: (4,5...5,9)Speed Setting value mm: 5,0...5,4 KSB solenoid-operated KSB solenoid-operated valve volt: 12.0 3rd speed 1/min: 2000 volt: 12,0 mm: 7.6...8,4 mm: (7.3...8,7) TD travel Supply-pump pressure: KSB solenoid-operated volt: 12,0 Speed 1/min: 1500 Setting value bar: 5,3...5,9 valve 1/min: 600 4th speed KSB solenoid-operated TD travel mm: 2,2...4,2 valve volt: 12,0 mm: -KSB solenoid-operated valve Full-load del. w/out charge press.: volt: -Speed 1/min : 1750 Supply-pump pressure characteristic: E24

1	Del.quantity cm3/: 24,027,0
1st speed 1/min: 600	1000H.: (22,528,5)
Supply-pump	
pressure bar: 3,13,7	Zero delivery (stop):
KSB solenoid-operated	, and a series of the series o
valve volt: 12,0	Mech. shutoff:
2nd speed 1/min: 2000 I	Speed 1/min: 2400
Supply-pump !	Del.quantity cm3/: -
	1000H.
	100011.
KSB solenoid-operated	Talla dalisuanus
valve volt: 12,0	Idle delivery:
Ownflow eventity of eventley value	1st seed 1/min //0
Overflow quantity at overflow valve:	1st speed 1/min: 440
4-1	KSB solenoid-operated
1st speed 1/min: 600	valve volt: 12,0
KSB solenoid-operated !	Del.quantity cm3/: -
valve volt: 12,0	1000H.: (5,013,0)
Oveflow : 4183	2nd speed 1/min: 475
quantity cm3/10s: (2698)	KSB solenoid-operated
quantity cm3/10s: (2698) 2nd speed	valve volt: 12,0
KSB solenoid-operated 1	Del.quantity cm3/: 2,57,5
valve volt: 12,0	1000H.: (1,09,0)
Overflow : 55138	3rd speed 1/min: 570
quantity cm3/10s: (40153)	KSB solenoid-operated
quarter cy cmo/103. (40222135)	valve volt: 12,0
Dalivary august and brookeys, oher	
Delivery-quant. and breakaway char.:	Del.quantity cm3/: -
1st speed 1/min: 2950	1000H.: 03,5
KSB solenoid-operated !	
valve volt: 12,0	Automatic starting fuel delivery:
Del.quantity cm3/: -	
1000H.: 02,0	1st speed 1/min: 400
2nd speed 1/min: 2675	KSB solenoid-operated
KSB solenoid-operated I	valve volt: 12,0
ا valve volt: 12٫0	Del.quantity cm3/: -
Del.quantity cm3/: -	ind. 1000H: 30,0
1000H.: (6,514,5)	
3rd speed 1/min: 2550	2nd speed 1/min: 500
KSB solenoid-operated	KSB solenoid-operated
valve volt: 12,0	valve volt: 12,0
Dol grantity and/1 18 5 26 5	
Del.quantity cm3/: 18,526,5	Del.quantity cm3/: -
1000H.: (18,526,5)	ax. 1000H: 30,0
4th speed 1/min: 2400	Object of all authorized and
KSB solenoid-operated !	Shutoff electromagnet:
valve volt: 12,0	A
Del.quantity cm3/: 28.130.1 1 1000H.: (26.931.3)	Cut-in Cut-in
1000H.: (26,951,3)	min. voltage : 10,0
Sth speed 1/min: 1/50	Rated voltage : 12,0
KSB solenoid-operated	•
valve volt: 12,0	Mounting and assembly dimensions:
Del.quantity cm3/: -	
1000H.: (27,832,2 I	Designation
6th speed 1/min: 1000	K mm : 3,2-3,4
KSB solenoid-operated I	KF mm : 5,7-6,0
valve volt: 12,0	MS mm : 1,6-1,85
	SVS max. mm : 3,4
Del.quantity cm3/: 26,029,0	UTU IIII
1000H.: (25,329,7)	XK mm : 23,3-25,3
7th speed 1/min: 600	XL mm: 10,4-13,8
KSB solenoid-operated	
valve volt: 12,0	Remarks:
l l	

Note inst. in remarks column

Test sheet Edition replaces : PEU 2,3K3 : 3.10.86 : 9.85

Calibrating oil : ISO-4113

Injection pump : VE 4/9F2125 R126-1 Type number : 0 460 494 123

Customer-specific information : PEUGEOT Customer

: XD3S AUT. Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening |

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 800 Setting value mm: 5,8...6,2

Supply-pump pressure:

Speed 1/min: 1500

Charge press. hPa: 800 Setting value bar: 5,6...6,2

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 800

Del.quantity cm3/ 1000H.: 53,5...54,5 Dispersion cm3/: 2,5 2nd speed 1/min: 750 Charge press. hPa: 800 Supply-pump bar: 3,4...4,0 1/min: 2000 1000H : pressure 3rd speed Full-load del. w/out charge press.: Charge press. hPa: 800 Supply-pump 1/min : 500 Speed bar: 7,1...7,7 pressure Del.quantity cm3/ 1000H.: 40,0...41,0 Overflow quantity at overflow valve: Low-idle speed regulation: 1/min: 500 1st speed Charge press. hPa: -1/min: 400 Oveflow quantity cm3/10s: (26...98) Del.quantity cm3/ 1000H.: 17,0...21,0 2nd speed 1/min: 2125 : 55...138 cm3/: 2,0 Overflow | Dispersion quantity cm3/10s: (40...153) 1000H.: -Full-load speed regulation: Delivery-quant. and breakaway char.: 1st speed 1/min: 750 1/min: 2350 Speed Charge press. hPa: 800 Charge-air pressure-setting Del quantity hPa: 300 cm3/ point LDA stroke mm: 4.5
Del.quantity cm3/: 47.5...48.5
1000H.: (45.8...50.2) 1000H: 26,5...32,5 Start: 1/min: 2650 2nd speed Charge press. hPa: 800
Del.quantity cm3/: 1000H:: 0...1,0 Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 67,0 1/min: 2350 3rd speed Charge press. hPa: 800
Del.quantity cm3/: 1000H.: (25,5...33,,5
4th speed 1/min: 2250 Inspection-pump test specifications Test specifications in parentheses Charge press. hPa: 800
Del.quantity cm3/: 38,5...44,5
1000H.: (37,5...45,5)
5th speed 1/min: 2000 Timing-device characteristic: 1/min: 750 1st speed Charge press. hPa: 800 5th speed mm: 0,8...1,6 Charge press. hPa: 800 TD travel Del.quantity cm3/: 52.0...54.0 1000H.: (50.8...55.2) 6th speed 1/min: 1500 mm: (0,5...1,9)1/min: 1000 2nd speed Charge press. hPa: 800 6th speed Charge press. hPa: 800 Del.quantity cm3/: -1000H.: (51,8...56,2) mm: 2,5...3,3 mm: (2,2...3,6) TD travel 3rd speed 1/min: 1500 1/min: 1000 Charge press. hPa: 800 7th speed Charge press. hPa: 800 Del.quantity cm3/: 50,5...53,5 1000H.: (49,8...54,2) TD travel mm: mm: (5,3...6,7) 1/min: 2000 4th speed 1/min: 750° Charge press. hPa: 800 8th speed mm: 7,8...8,6 mm: (7,5...8,9) TD travel Charge press. hPa: Del.quantity cm3/: 41.5...44.5 1000H: (40.8...45.2) 1/min: 500 Supply-pump pressure characteristic: 9th speed Charge press. hPa: -Deliquantity cm3/: -1st speed 1/min: 200 hPa: 800 1000H: (38,3...42,7) Charge press. Supply-pump bar: 1,4...2,0 Zero delivery (stop): pres/sure **E27**

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Mech. shutoff:
Speed
              1/min: -
Deliquantity cm3/: - 1000H.
Electr. shutoff:
              1/min: 400
Speed
Del.quantity....cm3/: -
Idle delivery:
              1/min: 400
1st speed
Del.quantity cm3/: -
1000H.: (15,0..23,0)
              1/min: 450
2nd speed
Del.quantity cm3/: 5.0...9.0
1000H.: (3.0...11.0)
3rd speed 1/min: 550
Del.quantity cm3/: -
1000H.: 0...3,5
Automatic starting fuel delivery:
              1/min: 230
1st speed
Del.quantity cm3/: -
 ind.
              1000H: 60,0
2nd speed
              1/min: 330
Del.quantity cm3/: -
              1000H: 60,0
Shutoff electromagnet:
Cut-in
min. voltage
                    : 10,0
                   : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
                    : K1
               mm
                    : 5,4...5,7
KF
               mm
MS
                   4,1...2,1:
               mm
                   : 4,6
SVS max.
               mm
XK
               mm
                   : 20,2...22,2
XL
                   : 9,4...12,8
               mm
Correction at adjusting nut (46)
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nummu

£28

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: 1/min: 400 Note inst. in remarks column Speed Del.quantity cm3/ 1000H.: 6,0...10,0 : PEU 2,5 A 1 : 10.12.86 Test sheet cm3/: 2.5 1000H.: (3,0) Edition Dispersion : 9.85 replaces Calibrating oil : ISO-4113 Full-load speed regulation: : VE 4/9F2250 R84-1 Injection pump Speed 1/min: 2325 Del.quantity cm3/ Type number : 0 460 494 125 1000H: 25,5...31,5 Customer-specific information Customer : PEUGEOT Start: : XD3 505 D Engine 1/min: 100 Speed Del.quantity mind. TEST BENCH REQUIREMENTS cm3/1000H.: 45,0 Calibrating-oil Load-dependent start of delivery: return temp. with thermometer : 40...48 Speed 1/min: 1250 : 42...50 electronically Inspection-pump test specifications Test specifications in parentheses Inlet press., bar: 0.2 Calibrating nozzle-holder : 1 688 901 022 assembly Timing-device characteristic: Opening 1/min: 700 1st speed mm: 0,6...1,4 mm: (0,3...1,7) 1/min: 1250 pressure bar: 130...133 TD travel 2nd speed Test inj. tubing : 1 680 750 073 TD travel mm: mm: (3,5...4,9)1/min: 2000 Outside diameter : 6 3rd speed mm: 8,1...8,9 mm: (7,8...9,2) x Wall thickness : 2 TD travel mm: 450 x Length Injection-pump setting values Test specifications in parentheses Supply-pump pressure characteristic: 1/min: 400 1st speed Timing-device travel: Supply-pump pressure bar: 2.1...2,7 1/min: 2200 1/min: 1250 2nd speed Setting value mm: 4,0...4,4 Supply-pump bar: 7,5...8,1 pressure Supply-pump pressure: Overflow quantity at overflow valve: 1/min: 1250 1/min: 400 Setting value bar: 5,0...5,6 1st speed : 41...83 Oveflow cm3/10s: (26...98) Full-load del. w/out charge press.: quantity 1/min: 2250 2nd speed 1/min : 1250 Over flow : 55...138 Speed quantity cm3/10s: (40...153) Del.quantity cm3/ 1000H: 38,5...39,5 cm3/: 2,5 Delivery-quant. and breakaway char.: Dispersion 1000H.: (3,0) 1st speed 1/min: 2550 F01

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Del.quantity cm3/: -
1000H.: 0...2,0
                1/min: 2450
2nd speed
Del.quantity cm3/: 4.5...12.5
1000H.: (4.5...12.5
3rd speed 1/min: 2325
Del.quantity cm3/:
              1000H.: (24,5...32,5)
                1/min: 2200
4th speed
Del.quantity cm3/: 39.0...41.0
1000H.: (37.8...42.2)
                1/min: 2000
5th speed
Del.quantity cm3/: 38,5...40,5
1000H.: (37,3...41,7)
6th speed 1/min: 1250
6th speed
Del.quantity cm3/: -
1000H.: (36,8...41,2)
               1/min: 600
7th speed
Del.quantity cm3/: 35,5...39,5
1000H.: (34,0...40,0)
Zero delivery (stop):
Mech. shutoff:
Speed
               1/min: -
Del.quantity cm3/: -
              1000H.
Idle delivery:
1st speed
                1/min: 400
Del.quantity cm3/: -
1000H.: (4,0...12,0)
                1/min: 440
2nd speed
Del.quantity
                cm3/: -
              1000H.: 0...2,0
Automatic starting fuel delivery:
1st speed
                1/min: 350
Del.quantity cm3/: -
                1000H: 45,0
 ind.
2nd speed
               1/min: 450
Del.quantity cm3/: -
                1000H: 45,0
Shutoff electromagnet:
Cut-in
                      : 10,0
min. voltage
                      : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
                      : K1
                 mm
                      : 5,2-5,4
KF
                 mm
                      2,1-9,0
MS
                 mm
                      : 3,3
SVS max.
                 mm
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F02

XK mm : 20,2-22,2 XL mm : 9,9-13,3

Remarks:

Note inst. in remarks column

Test sheet : FIA 1,9 E Edition : 16.12.86 replaces : 9.85 Calibrating oil : ISO 4113

Injection pump
Type number : VE 4/9F2300 R141 Type number : 0 460 494 132

Customer-specific information

Customer : FIAT

: x8/43 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0.2

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1500 Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

1/min : 1500 Speed

Del.quantity cm3/

1000H.: 29,2...30,2 cm3/: 2,5 1000H.: (3,0) Dispersion

Law tills and law taking	Del.quantity cm3/: 3,010,0
Low-idle speed regulation:	1000H.: (2,510,5) 3rd speed 1/min: 2500
Speed	Del.quantity cm3/: - 1000H.: (10,018,0)
1000H.: 9,013,0	4th speed 1/min: 2400
Dispersion cm3/: 2,5 1 1000H.: (3,0)	Del.quantity cm3/: 21,027,0 1000H.: (20,028,0)
Full-load speed regulation:	5th speed
Speed 1/min: 2500	Del.quantity cm3/: 31.033.4 1000H.: (30034.4)
Del.quantity cm3/	6th speed 1/min: 1500
1000H: 11,017,0	Del.quantity cm3/: - 1000H.: (26,531,9)
Start:	/th speed 1/min: 1000
Sacad A (wise 100	Del.quantity cm3/: 28,931,5 1000H.: (28,032,4)
Speed 1/min: 100 Del.quantity mind.	8th speed 1/min: 600
cm3/1000H.: 55,0	Del.quantity cm3/: 30,033,0
<u>'</u>	1000H: (28,534,5)
Load-dependent start of delivery:	Zero delivery (stop):
Speed 1/min: 1500	zero detrivery tscopr.
1	Mech. shutoff:
Inspection-pump test specifications Test specifications in parentheses	Speed 1/min: 2300 Del.quantity cm3/: -
l l	1000H.
Timing-device characteristic:	Idle delivery:
	•
1st speed 1/min: 800	1st speed 1/min: 390
TD travel mm: 1,72,5 mm: (1,42,8)	<pre>Vel.quantity cm3/: -</pre>
2nd speed 1/min: 1500	2nd speed 1/min: 440
TD travel mm: -	Del.quantity cm3/: 1,07,0
mm: (3,85,2) 3rd speed 1/min: 2300	1000H.: (08,0) 3rd speed
TD travel mm: 7,17,9	Del.quantity cm3/: -
mm: (6,88,2)	1000H.: 02,5
Supply-pump pressure characteristic:	Automatic starting fuel delivery:
1st speed 1/min: 400	1st speed 1/min: 300
Supply-pump !	Del.quantity cm3/: -
pressure bar: 2,83,4 2nd speed 1/min: 2300	ind. 1000H: 45,0
Supply-pump	2nd speed 1/min: 400
pressure bar: 7,48,0	Del.quantity cm3/: -
Overflow quantity at overflow valve:	ax. 1000H: 46,0
over from quarterey at over from varve.	Shutoff electromagnet:
1st speed 1/min: 400	
Oveflow	Cut-in min. voltage : 10,0
2nd speed 1/min: 2300	Rated voltage : 12,0
Overflow : 55138	· · · · · · · · · · · · · · · · · · ·
quantity cm3/10s: (40153)	Mounting and assembly dimensions:
Delivery-quant. and breakaway char.:	Designation
1st speed 1/min: 2600	K mm : 3,13,4
F04	

KF MS SVS max. XK XL

mm mm

mm

: 5,7...6,0 : 1,7...1,9 : 2,8 : 20,2...22,2 : 10,3...13,7 mm mm

Remarks:

Note inst. in remarks column

Test sheet : REN 2.0 K
Edition : 02.04.87
replaces : 10.84
Calibrating oil : ISO-4113

Injection pump : VE 4/9F2200 R153 Type number : 0 460 494 141

Customer-specific information Customer : RENAULT

Engine : J8S-709

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.3

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1400 Charge press. hPa: 800 Setting value mm: 4,0...4,4

Supply-pump pressure:

Speed 1/min: 1400 Charge press. hPa: 800 Setting value bar: 5,1...5,7

Full-load del. with charge press.:

Speed 1/min: 1400 Charge press. hPa: 800

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Del.quantity cm3/
                                                        2nd speed
                                                                      1/min: 1800
             1000H: 48,2...49,2
cm3/: 2,5
                                                                        hPa: 800
                                                        Charge press.
Dispersion
                                                        Supply-pump
              1000H : -
                                                                        bar: 6,3...6,9
                                                        pressure
Full-load del. w/out charge press.:
                                                       Overflow quantity at overflow valve:
Speed
             1/min : 600
                                                                      1/min: 600
                                                        1st speed
Del.quantity cm3/
                                                       Charge press. hPa: -
                                                       Oveflow'
              1000H.: 37,6...38,6
                                                                            : 41...83
                                                       quantity cm3/10s: (26...98)
2nd speed 1/min: 2000
Low-idle speed regulation:
                                                       Charge press. hPa: 800
                                                       Over flow
                                                                            : 55...138
Speed
               1/min: 350
                                                         quantity cm3/10s: (40...153)
Del.quantity cm3/
              1000H.: 9,0...13,0
                cm3/: 2,5
                                                       Delivery-quant. and breakaway char.:
Dispersion
                                                        1st speed
                                                                     1/min: 700
             1000H.: -
Full-load speed regulation:
                                                       Charge-air pressure-setting
                                                                        hPa: 200
                                                         point
                                                       LDA stroke mm: 4,5
Del.quantity cm3/: 41,5...42,5
1000H.: (39,0...45,0)
               1/min: 2400
Speed
Charge press. hPa: 800
Del.quantity cm3/
                                                                      1/min: 2700
               1000H: 23,0...29,0
                                                        2nd speed
                                                       Charge press. hPa: 800
                                                       Del.quantity cm3/: -
1000H.: 0...3,0
Start:
                                                                      1/min: 2500
Speed
               1/min: 100
                                                        3rd speed
                                                       Charge press. hPa: 800
Del.quantity mind.
                                                       Del.quantity cm3/: -
1000H.: 0...17,5
         cm3/1000H.: 60,0
                                                                      1/min: 2400
Inspection-pump test specifications
                                                        4th speed
                                                       Charge press. hPa: 800
Test specifications in parentheses
                                                       Del.quantity cm3/: -
1000H.: (22,0...30,0)
5th speed 1/min: 2000
Timing-device characteristic:
                                                       Charge press. hPa: 800
                                                       Del.quantity cm3/: 44,5...46,5
1000H.: (43,2...47,8)
               1/min: 1000
1st speed
Charge press. hPa: 800
                                                                      1/min: 1400
TD travel
                  mm: 1,9...2,7
                                                       6th speed
                  mm: (1,6...3,0)
                                                       Charge press. hPa: 800
                                                       Del.quantity cm3/: -
1000H.: (46,4...51,0)
7th speed 1/min: 1000
Charge press. hPa: 800
               1/min: 1400
2nd speed
Charge press. hPa: 800
TD travel
                  mm:
                  mm: (3,5...4,9)
                                                       Del.quantity cm3/: 46,2...49,2
3rd speed
               1/min: 1800
                                                                     1000H.: (44,7...50,7)
Charge press. hPa: 800
                  mm: 5,7...6,5
                                                                      1/min: 600
TD travel
                                                       8th speed
                  mm: (5,4...6,8)
                                                       Charge press.
                                                                        hPa: -
                                                       Del.quantity cm3/: 37.6...38.6
1000H: (35,1...41,1)
              1/min: 2000
4th speed
Charge press. hPa: 800
                  mm: 6,2...7,0
mm: (5,9...7,3)
TD travel
                                                       Zero delivery (stop):
                                                       Mech. shutoff:
Supply-pump pressure characteristic:
                                                                      1/min: -
                                                       Speed
                                                       Del.quantity cm3/: - 1000H.
               1/min: 600
1st speed
                hPa: 800
Charge press.
Supply-pump
pressure
                 bar: 2,7...3,2
                                                       Electr. shutoff:
F07
```

```
Speed
              1/min: 350
ELAB
Del.quantity cm3/
1000H.
               volt:
               cm3/: 3
Idle delivery:
1st speed
              1/min: 350
Del.quantity cm3/: 4.0...8.0
1000H.: (2.0...10.0)
              1/min: 480
3rd speed
Del.quantity cm3/: -
1000H.: 0...4,0
Automatic starting fuel delive:/:
              1/min: 180
1st speed
Del.quantity cm3/: -
 ind.
              1000H: 40,0
2nd speed
              1/min: 300
Del.quantity cm3/: -
              1000H: 40,0
 ax.
Shutoff electromagnet:
Cut-in
 min. voltage
                   : 10,0
Rated voltage
                   : 12,0
Mounting and assembly dimensions:
Designation
K
                   : 3,2...3,4 : 5,7...6,0
               mm
KF
               mm
                   : 1,4...1,6
MS
               mm
                   : 3,6
: 17,0...19,0
: 10,3...13,7
SVS max.
               mm
XK
               mm
XL
               mm
Correction at adjusting nut (46)
```

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Note inst. in remarks column 1/min: 400 Speed Del.quantity cm3/ : FIA 1,9 D 1000H.: 9,0...13,0 Test sheet cm3/: 2,0 : 16.12.86 Edition Dispersion replaces : 3.84 1000H.: (3,0) Calibrating oil : ISO 4113 Full-load speed regulation: : VE 4/9F2300 L157 Injection pump Speed 1/min: 2400 Type number : 0 460 494 144 Del.quantity cm3/ 1000H: 24,0...30,0 Customer-specific information : FIAT Customer Start: : X8/48 Engine Speed 1/min: 100 Del.quantity mind. TEST BENCH REQUIREMENTS cm3/1000H.: 57,0 Calibrating-oil Load-dependent start of delivery: return temp. with thermometer : 40...48 Speed 1/min: 1500 electronically : 42...50 Inspection-pump test specifications Inlet press., bar: 0.2 Test specifications in parentheses Calibrating nozzle-holder : 1 688 901 022 assembly Timing-device characteristic: 1/min: 800 Opening 1st speed bar : 130...133 TD travel mm: 0,7...1.5 pressure mm: (0,4...1,8)1/min: 1500 2nd speed Test inj. tubing : 1 680 750 073 TD travel mm: mm: (3,9...5,3) 1/min: 2300 Outside diameter : 6 3rd speed mm: 8,2...9,0 mm: (7,9...9,3) x Wall thickness : 2 TD travel mm: 450 x Length Supply-pump pressure characteristic: Injection-pump setting values Test specifications in parentheses 1/min: 400 1st speed Supply-pump Timing-device travel: bar: 2,5...3,1 1/min: 2300 pressure 1/min: 1500 2nd speed Setting value mm: 4,4...4,8 Supply-pump bar: 6,9...7,5 pressure Supply-pump pressure: Overflow quantity at overflow valve: 1/min: 1500 Speed Setting value bar: 5,1...5,7 1/min: 400 1st speed Oveflow : 41...83 cm3/10s: (26...98) 1/min: 2300 quantity Full-load del. w/out charge press.: 2nd speed Over flow *: 55...*138 1/min : 1500 Speed quantity cm3/10s: (40...153) Del.quantity cm3/ 1000н.: 33,0...34,0 cm3/: 2,5 1000H.: (3,0) Delivery-quant. and breakaway char.: Dispersion 1st speed 1/min: -F09

```
Del.quantity cm3/:
              1000H.:
2nd speed
               1/min: 2600
Del.quantity 0±3/: 3,0...9,0
              (ڭر10...10م) H.: (2,0...10)
               1/min: 2500
3rd speed
Del.quantity cm3/: 14,0...20,0
1000H.: (13,0...21,0)
               1/min: 2400
4th speed
Del.quantity cm3/: -
1000H.: (23,0...31,0)
5th speed 1/min: 2300
Del.quantity cm3/: 34.8...37.2
1000H.: (33.8...38.2)
               1/min: 1500
6th speed
Del.quantity cm3/: -
1000H.: (31,3...35,7)
               1/min: 1900
7th speed
               cm3/: 32,7...35,3
Del.quantity
              1000H.: (31,8...36,2)
8th speed
               1/min: 600
                cm3/: 34,0...37,0
Del.quantity
               1000H: (32,5...38,5)
Zero delivery (stop):
Mech. shutoff:
               1/min: 2300
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
               1/min: 400
              / cm3/: 9,0...13,0
1000H.: (7,0...15,0)
1/min: 450
Del.quantity
2nd speed
Del.quantity cm3/: 0,5...6,5
1000H.: (0...7,5)
               1/min: 500
3rd speed
Del.quantity cm3/: -
              1000H.: 0...2,0
Automatic starting fuel delivery:
               1/min: 300
1st speed
Del.quantity cm3/: -
 ind.
               1000H: 50,0
2nd speed
               1/min: 450
               cm3/:
Del.quantity
               1000H: 46,0
 ax.
Shutoff electromagnet:
Cut-in
                     : 10,0
 min. voltage
Rated voltage
                     : 12,0
```

Mounting and assembly dimensions:

F10

Designation : 3,1...3,4 : 5,7...6,0 mm Κ̈́F mm MS : 1,4..1,65 mm 2.8 25.0...27.0 SVS max. mm ХK mm : 9,2...12,6 XL mm

Remarks:

Note inst. in remarks column

Test sheet : REN 2,0F : 02.04.87 Edition replaces : 9.85

Calibrating oil : ISO 4113

Injection pump : VE 4/9F2250 R158 Type number : 0 460 494 145

Customer-specific information Customer : RENAULT

: J8S-706 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.3

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening -

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm : 450 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1400 Speed Setting value mm: 4,4...4,8

Supply-pump pressure:

1/min: 1400 Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

1/min : 1400 Speed

Del.quantity cm3/ 1000H.: 35,0...36,0

cm3/: 2,5 1000H.: (3,0) Dispersion

Del.quantity cm3/: -1000H.: 0...5,0 Low-idle speed regulation: 1/min: 2400 3rd speed Del.quantity cm3/: -1000H.: (16,0...24,0) 1/min: 425 Speed Del.quantity cm3/ 1000H.: 7,0...11,0 1/min: 2200 4th speed Del. quantity cm3/: 37.0...39.0 1000H.: (35.7...40,3) 5th speed 1/min: 2100 Del. quantity cm3/: 37.5...39.5 1000H.: (36.2...40,8) 6th speed 1/min: 1400 cm3/: 2,5 1000H.: (3,0) Dispersion Full-load speed regulation: Speed 1/min: 2400 Del.quantity cm3/ Del.quantity cm3/: -1000H.: (33,2...37,8) 1000H: 17,0...23,0 1/min: 1000 Start: 7th speed Del.quantity cm3/: 34,0...37,0 1000H.: (33,2...37,8) Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 52,0 Zero delivery (stop): Load-dependent start of delivery: Mech. shutoff: Speed 1/min: -Del.quantity cm3/: - 1000H. 1/min: 1400 Speed Inspection-pump test specifications Test specifications in parentheses Electr. shutoff: 1/min: 425 Speed Del.quantity cm3/: 3 1000H. Timing-device characteristic: 1/min: 1000 Idle delivery: 1st speed mm: 2,6...3,4 mm: (1,3...3,7) TD travel 1/min: 425 1st speed 1/min: 1400 Del.quantity cm3/: -1000H.: (5,0...13,0) 2nd speed TD travel mm: mm: (3,9...5,3) 1/min: 2000 1/min: 650 2nd speed Del.quantity cm3/: -1000H.: 0...5,0 3rd speed mm: 6,7...7,5 mm: (6,4...7,8) TD travel Automatic starting fuel delivery: Supply-pump pressure characteristic: 1/min: 370 1st speed 1st speed 1/min: 1000 Del.quantity cm3/: -1000H: 45,0 Supply-pump ind. bar: 3,9...4,5 1/min: 2000 pressure 2nd speed 1/min: 480 2nd speed Del.quantity cm3/: -Supply-pump 1000H: 45,0 bar: 6,5...7,1 pressure Overflow quantity at overflow valve: Shutoff electromagnet: 1st speed 1/min: 1000 Cut-in : 10,0 Oveflow : 55...70 min. voltage quantity cm3/10s: -Rated voltage : 12,0 1/min: 2200 2nd speed Over flow : 82...112 Mounting and assembly dimensions: quantity cm3/10s: -Designation : 3,2...3,4 : 5,7...5,9 Delivery-quant. and breakaway char.: mm **KF** 1st speed 1/min: 2550 mm F12

1111111111

Remarks:

Note inst. in remarks column

Test sheet : VWW 1,6 W18 Edition : 10.12.86 replaces : 12.85 Calibrating oil : ISO-4113

Injection pump : VE 4/9F2250 R170 Type number : 0 460 494 152

Customer-specific information

Customer : VW

Engine : 162 T -1,6L TURBO

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Start of delivery

Prestroke mm: 0,2

(from BDC): +/-0.02(0.04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value bar: 4,8...5,4

Full-load del. with charge press.:

Supply-pump bar: 2,5...3,1 1/min: 2250 Speed 1/min: 1500 Charge press. hPa: 750 pressure 2nd speed Del.quantity cm3/ hPa: 750 Charge press. 1000H.: 42,5...43,5 cm3/: 2,5 1000H: (3,0) Supply-pump bar: 6,9...7,5 Dispersion pressure Overflow quantity at overflow valve: Full-load del. w/out charge press.: 1st speed 1/min: 600 Charge press. hPa: 750 1/min : 600 Speed Del.quantity cm3/ Oveflow : 41...83 quantity cm3/10s: (26...98)
2nd speed 1/min: 2250
Charge press. hPa: 750
Overflow : 55...138 1000H.: 25,0...26,0 Low-idle speed regulation: Speed 1/min: 415 Charge press. hPa: 750 Del.quantity cm3/ quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1000H.: 6,0...10,0 1st speed 1/min: 900 cm3/: 2,0 1000H.: (3,0) Dispersion Charge-air pressure-setting Charge-air pressure-setting
point hPa: 300

Del.quantity cm3/: 36,0...37,0
1000H.: (34,3...38,7)

2nd speed 1/min: 2650

Charge press. hPa: 750

Del.quantity cm3/: 1000H.: 0...4,0

3rd speed 1/min: 2525

Charge press. hPa: 750 Full-load speed regulation: speed 1/min: 2525 Charge press. hPa: 750 Del.quantity cm3/ 1000H: 13,0...19,0 3rd speed 1/min: 2525 Charge press. hPa: 750 Del.quantity cm3/: 13,0...19,0 1000H.: (12,0...20,0) 4th speed 1/min: 2250 Charge press. hPa: 750 Del.quantity cm3/: 35,0...37,0 1000H.: (33,8...38,2) 5th speed 1/min: 1500 Charge press. hPa: 750 Start: Speed 1/min: 100 Charge press. hPa: 750 Del.quantity mind. cm3/1000H.: 35,0 Inspection-pump test specifications Charge press. hPa: 750
Del.quantity cm3/: 1000H.: (40,8...45,2)
6th speed 1/min: 600
Charge press. hPa: 750
Del.quantity cm3/: 34,8...37,8
1000H.: (33,3...39,3)
7th speed 1/min: 600 Test specifications in parentheses Timing-device characteristic: 1st speed 1/min: 900 Charge press. hPa: 750 mm: 1,6...2,4 mm: (1,3...2,7) 1/min: 600 7th speed TD travel Charge press. hPa: Del.quantity cm3/: 1000H.: (23,3...27,7) 1/min: 1500 2nd speed Charge press. hPa: 750 TD travel mm: · mm: (3,3...4,7) 1/min: 2250 Zero delivery (stop): 3rd speed Charge press. hPa: 750 Mech. shutoff: mm: 6,4...7,2 mm: (6,1...7,5) 1/min: -TD travel Del.quantity cm3/: - 1000H. Supply-pump pressure characteristic: Electr. shutoff: 1st speed 1/min: 600 1/min: 400 Del.quantity cm3/: - 1000H. Charge press. hPa: 750

F15

```
Idle delivery:
               1/min: 415
1st speed
Del.quantity cm3/: -
1000H.: (4,0...12,0)
2nd speed 1/min: 1000
2nd speed
KSB solenoid-operated
valve
                volt: 1000
Del.quantity cm3/: -
1000H.: 0...3,0
Automatic starting fuel delivery:
1st speed
               1/min: 400
Charge press. hPa: 750
Del.quantity cm3/: -
ind. 1000H: 29,5
2nd speed
              1/min: 500
Charge press. hPa: 750
Del.quantity cm3/: - ax. 1000H: 37,5
Shutoff electromagnet:
Cut-in
                : 10,0
min. voltage
                    : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
                   : 5,7...6,0
: 1,2...1,4
KF
                mm
```

mm

MS

Remarks:

Note inst. in remarks column

Test sheet : PEU 2,3K1 : 3.10.86 Edition replaces : 9.85 Calibrating oil : ISO-4113

Injection pump : VE 4/9F2075 R126-2 Type number : 0 460 494 155

Customer-specific information Customer : PEUGEOT

Engine : XD3S

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar : 0.2

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening |

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm: 450

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 800 Setting value mm: 5,8...6,2

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 800 Setting value bar: 5,6...6,2

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 800

```
Del.quantity cm3/
1000H.: 53,5...54,5
Dispersion cm3/: 2,5
                                                                                 hPa: 800
                                                               Charge press.
                                                               Supply-pump
                                                                               bar: 3,4...4,0
1/min: 2000
                                                                pressure
                                                               3rd speed
                1000H : -
                                                                                 hPa: 800
                                                               Charge press.
                                                               Supply-pump
Full-load del. w/out charge press.:
                                                                pressure
                                                                                 bar: 7,1...7,7
               1/min : 500
Speed
Del.quantity cm3/
                                                              Overflow quantity at overflow valve:
                1000H.: 40,0...41,0
                                                              1st speed
Oveflow
                                                                               1/min: 500
Low-idle speed regulation:
                                                                                     : 41...83
                                                                            cm3/10s: (26...98)
1/min: 2075
                                                                quantity
                                                              2nd speed
Speed
                 1/min: 350
Del.quantity cm3/
                                                              Overflow
                                                                                     : 55...138
                1000H.: 20,0...24,0
                                                                quantity cm3/10s: (40...153)
                  cm3/: 2,0
Dispersion
               1000H.:
                                                              Delivery-quant. and breakaway char.:
                                                              1st speed 1/min: 750
Full-load speed regulation:
                                                              Charge-air pressure-setting point hPa: 300
                 1/min: 2300
Speed
                                                              LDA stroke mm: 4.5
Del.quantity cm3/: 47.5...48.5
1000H.: (45.8...50.2)
Charge press. hPa: 800
Deliquantity cm3/
                 1000H: 26,5...32,5
                                                                               1/min: 2600
                                                              2nd speed
                                                              Charge press. hPa: 800
Del.quantity cm3/: -
1000H.: 0...1,0
Start:
Speed
                1/min: 100
                                                                               1/min: 2300
Del.quantity mind.
                                                              3rd speed
          cm3/1000H.: 67<sub>0</sub>0
                                                              Charge press. hPa: 800
                                                              Del.quantity cm3/: -
1000H.: (25,5...33,5)
Inspection-pump test specifications
                                                                               1/min: 2200
Test specifications in parentheses
                                                              4th speed
                                                              Charge press. hPa: 800
Del.quantity cm3/: 39,5...45,5
1000H.: (38,5...46,5)
Sth speed 1/min: 2000
Timing-device characteristic:
                                                              Charge press. hPa: 800
Del.quantity cm3/: 52,0...54,0
1000H.: (50,8...55,2)
6th speed 1/min: 1500
                1/min: 750
1st speed
Charge press. hPa: 800
                    mm: 0,8...1,6
TD travel
                    mm: (0,5...1,9)
                1/min: 1000
                                                              Charge press. hPa: 800
2nd speed
                                                              Del.quantity cm3/: -
1000H.: (51,8...56,2)
7th speed 1/min: 1000
Charge press. hPa: 800
                    mm: 2,5...3,3
mm: (2,2...3,6)
TD travel
                                                              Charge press. hPa: 800
Del.quantity cm3/: 50.5...53.5
1000H: (49.8...54.2)
3rd speed
                 1/min: 1500
TD travel
                    mm:
                    mm: (5,3...6,7)
                 1/min: 2000
                                                                               1/min: 750
4th speed
                                                              8th speed
Charge press. hPa: 800
                                                              Charge press. hPa:
                                                              Del.quantity cm3/: 41.5...44.5
1000H: (40.8...45.2)
                    mm: 7<sub>2</sub>8...8<sub>6</sub>
TD travel
                    mm: (7,5...8,9)
                                                                               1/min: 500
                                                              9th speed
                                                              Charge press. hPa: -
Del.quantity cm3/: -
Supply-pump pressure characteristic:
                                                                               1000H: (38,3...42,7)
                1/min: 200
1st speed
Charge press. hPa: 800
Supply-pump
                                                              Zero delivery (stop):
                bar: 1,4...2,0
1/min: 750
 pressure
                                                              Mech. shutoff:
2nd speed
```

F18

```
Speed
               1/min: -
Del.quantity cm3/: - 1000H.
Electr. shutoff:
Speed
             1/min: 400
Del.quantity cm3/: -
Idle delivery:
1st speed
              1/min: 350
Del.quantity cm3/: -
1000H.: (18,0..26,0)
               1/min: 400
2nd speed
Del.quantity cm3/: 8,0...12,0
1000H.: (6,0...14,0)
              1/min: 500
3rd speed
Del.quantity cm3/: -
1000H.: 0...1,0
Automatic starting fuel delivery:
              1/min: 230
1st speed
Del.quantity cm3/: -
               1000H: 60,0
 ind.
2nd speed
               1/min: 330
Del.quantity cm3/: -
               1000H: 60,0
Shutoff electromagnet:
Cut-in
min. voltage
                    : 10,0
Rated voltage
                    : 12,0
Mounting and assembly dimensions:
Designation
                    : 5,4...5,7
: 1,2...1,4
KF
MS
                mm
                    : 4,6
: 20,2...22,2
: 9,7...13,1
SVS max.
                mm
ХK
                mm
XL
                mm
Correction at adjusting nut (46)
```

Del.quantity cm3/ 1000H.: 48.2...49.2 Dispersion cm3/: 2,5 BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column 1000H : -Full-load del. w/out charge press.: Test sheet : REN 2,0 K1 Edition : 02.04.87 : 10.84 replaces Speed 1/min : 600 Del.quantity cm3/ 1000H.: 37,6...38,6 : ISO-4113 Calibrating oil : VE 4/9F2200 R153-1 Injection pump Type number : 0 460 494 156 Low-idle speed regulation: Customer-specific information Speed 1/min: 350 Del.quantity cm3/ 1000H.: 9,0...13,0 Customer : RENAULT Engine : J 8 S-T01 cm3/: 2,5 Dispersion 1000H.: -TEST BENCH REQUIREMENTS Full-load speed regulation: Calibrating-oil 1/min: 2400 Speed return temp. Charge press. hPa: 800 with thermometer: 40...48 Deliquantity cm3/ : 42...50 1000H: 23.0...29.0 electronically Start: Inlet press., bar: 0.3 Calibrating nozzle-holder Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 60,0 : 1 688 901 022 assembly Opening pressure bar: 130...133 Inspection-pump test specifications Test specifications in parentheses Test inj. tubing : 1 680 750 073 Timing-device characteristic: Outside diameter : 6 x Wall thickness : 2 1st speed 1/min: 1000 Charge press. hPa: 800 mm : 450 x Length TD travel mm: 1,9...2,7 mm: (1,6...3,0)Injection-pump setting values 1/min: 1400 2nd speed Test specifications in parentheses Charge press. hPa: 800 TD travel Timing-device travel: mm: mm: (3,5...4,9) 1/min: 1800 1/min: 1400 3rd speed Charge press. hPa: 800 Charge press. hPa: 800 mm: 5,7...6,5 TD travel Setting value mm: 4,0...4,4 mm: (5,4...6,8)1/min: 2000 4th speed Supply-pump pressure: Charge press. hPa: 800 mm: 6,2...7,0 mm: (5,9...7,3) TD travel 1/min: 1400 Speed Charge press. hPa: 800 Setting value bar: 5,1...5,7 Supply-pump pressure characteristic: Full-load del. with charge press.: 1/min: 600 1st speed Charge press. hPa: 800 1/min: 1400 Speed Supply-pump Charge press. hPa: 800 bar: 2,6...3,2 pressure

```
2nd speed
               1/min: 1800
Charge press. hPa: 800
                                                            Idle delivery:
Supply-pump
 pressure
                  bar: 6,3...6,9
                                                            1st speed
                                                                           1/min: 350
                                                           Del.quantity cm3/: -
1000H.: (7.0...15.0)
2nd speed 1/min: 375
Overflow quantity at overflow valve:
                                                           Del.quantity cm3/: 4.0...8.0
1000H.: (2.0...10.0)
1st speed
                1/min: 600
Charge press. hPa: -
Oveflow |
                                                                           1/min: 480
                                                            3rd speed
quantity cm3/10s: (26...98)
2nd speed 1/min: 2000
                                                           Del.quantity cm3/: -
1000H.: 0...4,0
Charge press. hPa: 800
Overflow : 55..
                      : 55...138
                                                            Automatic starting fuel delivery:
 quantity cm3/10s: (40...153)
                                                            1st speed
                                                                           1/min: 180
Delivery-quant. and breakaway char.:
                                                            Del.quantity cm3/: -
1st speed
              1/min: 700
                                                                           1000H: 40,0
                                                             ind.
Charge-air pressure-setting
 point
                  hPa: 200
                                                                           1/min: 300
                                                            2nd speed
LDA stroke mm: 4,5

Del.quantity cm3/: 41,5...42,5

1000H.: (39,0...45,0)

2nd speed 1/min: 2700
                                                            Deliquantity cm3/: -
                                                                           1000H: 40,0
                                                            Shutoff electromagnet:
Charge press. hPa: 800
Del.quantity cm3/: -
                                                           Cut-in
              1000H.: 0...3,0
                                                             min. voltage
                                                                                  : 10,0
3rd speed
               1/min: 2500
                                                            Rated voltage
                                                                                 : 12,0
Charge press. hPa: 800
Del.quantity cm3/: -
1000H.: 0...17,5
4th speed 1/min: 2400
                                                            Mounting and assembly dimensions:
                                                            Designation
Charge press. hPa: 800
                                                                                  : 3,2...3,4
                                                                            mm
Del.quantity cm3/: -
                                                                                  : 5,7...6,0
                                                           KF
                                                                            mm
              1000H.: (22,0...30,0)
                                                           MS
                                                                                 £ 1,4...1,6
                                                                            mm
                1/min: 2000
                                                                                 : 3,6
: 17,0...19,0
5th speed
                                                           SVS max.
                                                                            mm
Charge press. hPa: 800
Del.quantity cm3/: 44,5...46,5
1000H.: (43,2...47,8)
6th speed 1/min: 1400
                                                           ΧK
                                                                            mm
                                                                                 7, 3...13 :
                                                           XL
                                                                            mm
Charge press. hPa: 800
Del.quantity cm3/: -
                                                           Correction at adjusting nut (46)
              1000H.: (46,4...51,0)
                1/min: 1000
7th speed
Charge press. hPa: 800
Del.quantity cm3/: 46.2...49.2
1000H.: (44.9...49.3)
8th speed 1/min: 600
Charge press. hPa:
Deliquantity cm3/: -
                1000H: (35,1...41,1)
Zero delivery (stop):
              1000H.
Electr. shutoff:
Speed
               1/min: 350
ELAB
                 volt:
Deliquantity cm3/: 3
              1000H.
```

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Note inst. in remarks column 1/min: 450 Speed Del.quantity cm3/ 1000H.: 6,0...10,0 : VWW 1,7 A Test sheet cm3/: 2,0 Edition : 10.12.86 Dispersion 1000H.: (3.0) replaces : 10.85 Calibrating oil : ISO 4113 Full-load speed regulation: Injection pump : VE 4/9F2250 R187 1/min: 2450 Speed : 0 460 494 164 Type number Del.quantity cm3/ 1000H: 12,0...18,0 Customer-specific information Customer Start: Engine : 086-1.7LIT. 1/min: 100 Speed Del.quantity mind. TEST BENCH REQUIREMENTS cm3/1000H.: 35,0 Calibrating-oil oc Inspection-pump test specifications return temp. Test specifications in parentheses with thermometer : 40...48 electronically : 42...50 Timing-device characteristic: Inlet press., bar: 0.2 1st speed 1/min: 1000 Calibrating nozzle-holder TD travel mm: 2,1...2,9 mm: (1.8...3,2) 1/min: 1500 : 1 688 901 000 assembly 2nd speed Opening TD travel mm: mm: (3,8...5,2)pressure bar : 147...150 1/min: 2250 3rd speed mm: 7_4...8_2 TD travel mm: (7,1,...8,5)Test inj. tubing : 1 680 750 017 Supply-pump pressure characteristic: Outside diameter : 6 x Wall thickness x Length mm: 840 1/min: 600 1st speed Supply-pump bar: 2,3...3,3 Injection-pump setting values pressure 1/min: 2250 2nd speed Test specifications in parentheses Supply-pump bar: 6,5...7,5 Timing-device travel: pressure Overflow quantity at overflow valve: 1/min: 1500 Setting value mm: 4,3...4,7 1/min: 600 1st speed : 55...70 Oveflow Supply-pump pressure: cm3/10s: (50...75) 1/min: 2250 quantity 1/min: 1500 2nd speed Speed : 82...112 Setting value bar: 4,8...5,4 Over flow quantity cm3/10s: (77...117) Full-load del. w/out charge press.: Delivery-quant. and breakaway char.: 1st speed 1/min: 2600 1/min : 1500 1st speed Speed Del.quantity cm3/: -Del.quantity cm3/ 1000H.: 34,5...35,5 cm3/: 2,5 1000H.: (3,0) 1000H.: 0...6,0 1/min: 2450 Dispersion 3rd speed

F22

```
Del.quantity cm3/: -
1000H.: (11,0...19,0)
4th speed
               1/min: 2400
Del.quantity cm3/: 17.0...27.0
1000H.: (16.0...28.0)
5th speed
               1/min: 2250
Del.quantity cm3/: 31.0...33.0
1000H.: (29.8...34.2)
6th speed
               1/min: 1500
Del.quantity cm3/: -
1000H: (32,8...37,2)
               1/min: 600
7th speed
Del.quantity cm3/: 23.5...26.5
1000H.: (22.0...28.0)
Zero delivery (stop):
Mech. shutoff:
               1/min: -
Speed
Del.quantity cm3/: - 1000H.
Electr. shutoff:
               1/min: 450
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
               1/min: 450
1st speed
Del.quantity cm3/: -
1000H.: (4,0...12,0)
               1/min: 1200
2nd speed
Del.quantity cm3/: -
1000H.: 0...4,0
Automatic starting fuel delavery:
               1/min: 360
1st speed
               cm3/: -
Deliquantity
               1000H: 35,0
 ind.
               1/min: 560
2nd speed
Del.quantity
               cm3/: -
               1000H: 35,0
 ax.
Shutoff electromagnet:
Cut-in
                     : 10,0
 min. voltage
Rated voltage
                     : 12,0
Mounting and assembly dimensions:
Designation
                    : 3,2...3,4
                mm
KF
                mm
MS
                mm
                    5ر1،،،،3ر1 :
SVS max.
                     : 4,8
                mm
```

Remarks:

Note inst. in remarks column

Test sheet : FOR 1.6 A1 Edition : 3.10.86

replaces :

Calibrating oil : ISO-4113

Injection pump : VE 4/9F1800 R125-1 Type number : D 460 494 168

Customer-specific information Customer : FORD-KENT

Engine : 1,6L IDI IND.

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Setting value mm: 5,0...5,4 KSB solenoid-operated

KSB solenoid-operated valve volt: 12,0

Supply-pump pressure:

Speed 1/min: 1500 Setting value bar: 5,3...5,9 KSB solenoid-operated

KSB solenoid-operated valve volt: 12,0

Full-load del. w/out charge press.:

Speed 1/min: 1000

Del.quantity cm3/ KSB solenoid-operated volt: 12.0 1/min: 1750 0.28,...0₄ : 1000H.: valve 2nd speed KSB solenoid-operated volt: 12,0 cm3/: 2,5 valve Supply-pump Dispersion bar: 5,9...6,5 pressure 1000H.: -KSB solenoid-operated valve volt: 12,0 Low-idle speed regulation: Overflow quantity at overflow valve: Speed 1/min: 440 Del quantity cm3/ 1/min: 600 1st speed 1000H.: 7,0...11,0 KSB solenoid-operated volt: 12,0 KSB solenoid-operated valve volt: 12,0 cm3/: 2,0 : 41...83 valve **Oveflow** quantity cm3/10s: (26...98) Dispersion 1000H.: -1/min: 1750 2nd speed Full-load speed regulation: KSB solenoid-operated volt: 12,0 Speed 1/min: 1850 Over flow : 55...138 Del.quantity cm3/ quantity cm3/10s: (40...153) 1000H: 20,0...26,0 Delivery-quant. and breakaway char.: Start: 1st speed 1/min: 2050 KSB solenoid-operated Speed 1/min: 100 valve volt: 12,0 Del.quantity cm3/: - 1000H.: 0...2,0 Del.quantity mind. cm3/1000H.: 50,0 1/min: 1910 2nd speed KSB solenoid-operated Inspection-pump test specifications valve volt: 12.0 Del.quantity cm3/: 7.5...15.5 1000H.: (7.5...15.5) Test specifications in parentheses 1/min: 1850 Timing-device characteristic: 3rd speed KSB solenoid-operated 1/min: 800 volt: 12,0 1st speed valve Del.quantity cm5/: -1000H.: (19,0...27,0 mm: 1,6...2,4 TD travel mm: (1,3...2,7)1/min: 1750 KSB solenoid-operated 4th speed volt: 12,0 valve KSB solenoid-operated 1/min: 1500 2nd speed valve volt: 12,0 Del.quantity cm3/: 29.0...31.0 1000H.: (27.8...32.2) TD travel mm: mm: (4,5...5,9 1/min: 1000 KSB solenoid-operated 5th speed volt: 12,0 1/min: 1750 KSB solenoid-operated valve 3rd speed valve volt: 12,0 Del.quantity cm3/: -1000H.: (25,3...29,7) mm: $6,3...7_1$ TD travel mm: (6,0...7,4)1/min: 600 KSB solenoid-operated 6th speed valve volt: 12.0 KSB solenoid-operated 4th speed 1/min: 600 valve volt: 12,0 Del.quantity cm3/: 24,0...27,0 1000H.: (22,5...28,5) mm: 2,2...4,2 TD travel mm: KSB solenoid-operated valve volt: -Zero delivery (stop): Supply-pump pressure characteristic: Mech. shutoff: 1/min: 1800 Speed Del.quantity cm3/: - 1000H. 1st speed 1/min: 600 Supply-pump bar: 3,1...3,7 pressure

```
Idle delivery:
1st speed
              1/min: 440
KSB solenoid-operated
                volt: 12,0
valve
Del.quantity cm3/: - 1000H.: (5,0...13,0)
               1/min: 475
2nd speed
KSB solenoid-operated
valve volt: 12.0
Del.quantity cm3/: 2.5...7.5
1000H.: (1.0...9.0)
3rd speed 1/min: 570
3rd speed
KSB solenoid-operated
valve
                volt: 12,0
Del.quantity cm3/: - 1000H.: 0...3,5
Automatic starting fuel delivery:
1st speed
              1/min: 400
KSE solenoid-operated
               volt: 12,0
valve
Del.quantity cm3/: -
               1000H: 30,0
 ind.
              1/min: 500
2nd speed
KSB solenoid-operated
                volt: 12,0
valve
Del.quantity cm3/: -
               1000H: 30,0
Shutoff electromagnet:
Cut-in
                  : 10,0
min. voltage
                    : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
                    : 3,2-3,4 : 5,7...6,0
K
                mm
KF
                mm
                    : 1,6..1,85
: 3,4
: 23,3...25,3
MS
                mm
SVS max.
                mm
XK
                mm
XL
                   : 10,4...13,8
                mm
Remarks:
```

Note inst. in remarks column

Test sheet : FIA 1,7 H3 : 18.12.86 Edition : 4.86 replaces Calibrating oil : ISO 4113

Injection pump Type number : VE 4/9F2300 R207 : 0 460 494 170

Customer-specific information : FIAT-RITMO Customer

: x8/34 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 022 assembly '

Opening |

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Setting value mm: 4,1...4,5

Supply-pump pressure:

1/min: 1500 Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

Speed 1/min : 1500

Del.quantity cm3/ 1000H.: 29.5...30,5 Dispersion cm3/: 2.5 1000H.: (3,0)

i allaidle speed population.	Del.quantity cm3/: -
Low-idle speed regulation:	1 000H.: 01,5 I 3rd speed 1/min: 2650
Speed 1/min: 390 Del.quantity cm3/	Del.quantity cm3/: 2,09,0 1000H.: (1,59,5)
1000H.: 10,014,0	4th speed
Dispersion cm3/: 2.5 1000H.: (3.0)	Del.quantity cm3/: - 1000H.: (18,026,0)
Full-load speed regulation:	l 5th-speed 1/min:2300
Speed 1/min: 2450	Del.quantity cm3/: 31.834.2 1000H.: (30.835.2)
Del.quantity cm3/	l 6th sneed 1/min: 1500
1000H: 19,025,0	Del.quantity cm3/: - 1000H.: (27,832,2)
Start:	I /th speed 1/min: 1000
Speed 1/min: 100	Del.quantity cm3/: 29,832,2 1000H.: (28,733,3)
Del.quantity mind.	l 8th speed 1/min: 600
cm3/1000H.: 55,0	Del.quantity cm3/: 30,033,0 1 1000H: (28,534,5)
Load-dependent start of delivery:	الربية والربي المال الما
Speed 1/min: 1500	Zero delivery (stop):
Speed 1/min: 1500	Mech. shutoff:
Inspection-pump test specifications	Speed 1/min: 2300
Test specifications in parentheses	Del.quantity cm3/: - 1900H.
Timing-device characteristic:	Isle delivery:
	·
1st speed 1/min: 800 TD travel mm: 1,62,4	1st speed 1/min: 390 Del.quantity cm3/: -
mm: $(1,32,7)$	(0,.16,0). ا
2nd speed	2nd speed 1/min: 440 Del.quantity cm3/: 1,07,0
mm: (3,65,0)	1000H.: (08,0)
3rd speed	3rd speed 1/min: 500 Del.quantity cm3/: -
mm: (6,78,1)	1000H.: 01,5
Supply-pump pressure characteristic:	Automatic starting fuel delivery:
1st speed 1/min: 600	1st speed 1/min: 300
Supply-pump pressure bar: 3,13,7	Del.quantity cm3/: - ind. 1000H: 48,0
pressure bar: 3,13,7 2nd speed 1/min: 2300	
Supply-pump !	2nd speed 1/min: 400
pressure bar: 7,27,8	Del.quantity cm3/: - ax. 1000H: 45,0
Overflow quantity at overflow valve:	
1st speed 1/min: 600	Shutoff electromagnet:
Oveflow : 4183	Cut-in
quantity cm3/10s: (2698) 2nd speed	min. voltage : 10,0 Rated voltage : 12,0
Overflow	
quantity cm3/10s: (40153)	Mounting and assembly dimensions:
Delivery-quant. and breakaway char.:	Designation 72 7/
1st speed 1/min: 2900	K mm : 3,23,4
F28	

KF mm : 5,7...5,9 MS mm : 1,7...1,9 SVS max. mm : 2,8

Remarks:

Note inst. in remarks column

Test sheet : VWW 1,6 X2 Edition : 02.04.87 replaces : 4.86 Calibrating oil : ISO 4113

Injection pump : VE 4/9F2250 R211 Type number : 0 460 494 172

Customer-specific information

Customer : VW

Engine : 086-1,6LIT.LLK

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 000

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value mm: 3,8...4,2

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 750 Setting value bar: 4,9...5,5

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 750

1	
Del.quantity cm3/	1 1st seed 1/win. 500
1000H.: 41,542,5	1 1st speed 1/min: 500
Dispersion cm3/: 2,5	I Charge press. hPa: 750
1000H : -	Supply-pump
	pressure bar: 2,02,6 1 2nd speed 1/min: 2250
Full-load del. w/out charge press.:	L Zna speed 1/min: 2250
0 4// 1 4500	1 Charge press. hPa: 750
Speed 1/min: 1500	Supply-pump pressure bar: 7,07,6
Del.quantity cm3/	pressure bar: /,U/,o
1000H.: 34,337,3	1 Overfler montitu et evenfler volve
lou-idle cood population.	Overflow quantity at overflow valve:
Low-idle speed regulation:	1 1at assaul 1/min : 600
Speed 1/min: 375	1 1st speed 1/min: 600
Charge press. hPa: -	Charge press. hPa: - Oveflow: 5570
Del.quantity cm3/	quantity cm3/10s: (5075
1000H.: 12,014,0	2nd speed 1/min: 2250
Dispersion cm3/: 2,5	Charge press. hPa: 750
1000H.: -	1 Overflow : 82112
Residual-Delivery Setting	I quantity cm3/10s: (77117)
Speed 1/min: 550	dancies emoriosi circuitivi,
Del.quantity cm3/	Delivery-quant. and breakaway char.:
1000H.: 2,53,5	I 1st speed 1/min: 900
Full-load speed regulation:	Charge-air pressure-setting
	I point hPa: 300
Speed 1/min: 2525	LDA stroke mm: 6.0 Del.quantity cm3/: 32,533,5 1 000H: (30,036,0) 2nd speed 1/min: 2700
Charge press. hPa: 750	l * Del.quantity cm3/: 32,533,5
Deliquantity cm3/	1000H.: (30,036,0
1000H: 13,019,0	l 2nd speed 1/min: 2700
	I Charge press. hPa: 750
Start:	Charge press. hPa: 750 Del.quantity cm3/: -
	1000H.: 04,0
Speed 1/min: 100	1 3rd speed 1/min: 2525
Del.quantity mind.	Charge press. hPa: 750
cm3/1000H.: 35,0	Del.quantity cm3/: -
Inconstignation test considirations	1000H.: (12,020,0) 1 4th speed 1/min: 2425
Inspection-pump test specifications Test specifications in parentheses	Charge press. hPa: 750
rest spectifications in parentheses	Del.quantity cm3/: 25,035,0
	1 1000H.: (24,036,0)
Timing-device characteristic:	I 5th speed 1/min: 2250
	Charge press. hPa: 750
1st speed	Del.quantity cm3/: 35,537,5
Charge press. hPa: 750	1000H.: (34,338,7)
TD travel mm: 1,82,6	l 6th speed 1/min: 1500
mm: (1,52,9)	I Charge press. hPa: -
2nd speed 1/min: 1500	Del.quantity cm3/: -
Charge press. hPa: 750	1 1000H.: (33,638,0)
TD travel mm: - (3,34,3)	7th speed 1/min: 1500
7nd accord 1/min (1900	Charge press. hPa: 750
3rd speed 1/min: 1800	Del.quantity cm3/: -
Charge press. hPa: 750 TD travel mm: 4,85,6	1 1000H.: (39,844,2) 1 8th speed 1/min: 500
mm: (4.5.5.9)	8th speed 1/min: 500 Charge press. hPa: -
mm: (4,55,9) 4th speed 1/min: 2250	Del.quantity cm3/: 23,524,5
Charge press. hPa: 750	1 1000H: (21,027,0)
TD travel mm: 6,16,9	9th speed 1/min: 500
mm: (5,87,2)	Charge press. hPa: 750
	Del.quantity cm3/: 31,034,0
Supply-pump pressure characteristic:	1 1000H: (19,535,5)

G03

```
Zero delivery (stop):
Mech. shutoff:
                1/min: -
Speed
Del.quantity cm3/: - 1000H.
Electr. shutoff:
                1/min: 425
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
                1/min: 375
Del.quantity cm3/: -
1000H.: (7,5...18,5)
2nd speed 1/min: 425
Del.quantity cm3/: 5.0...9.0
1000H.: (1,5...12,5)
High Idle:
Speed 1/min: 525
Del.quantity cm3/: 7.0...9.0
1000H.: (3,0...13,0)
Residual:
Speed 1/min: 500
Del.quantity: 2,7...4,7
1000H.: (0,2...7,2)
Automatic starting fuel delivery:
1st speed
                1/min: 150
Del.quantity cm3/: -
                1000H: 35,0
 ind.
                1/min: 350
2nd speed
Del.quantity cm3/: -
                1000H: 30,0
Shutoff electromagnet:
Cut-in
                      : 10,0
 min. voltage
                      : 12,0
Rated voltage
Mounting and assembly dimensions:
Designation
                      : K1
                 mm
                      : 5,7...6,0
: 1,2...1,4
: 2,7
KF
                 mm
MS
                 mm
SVS max.
                 mm
Setting of residual delivery.
```

```
Del.quantity cm3/
                                                                 1000H.: 41.5...42,5
cm3/: 2.5
1000H.: (3,0)
BOSCH-INJ.-PUMP TEST SPECIFICATIONS
                                                    Dispersion
Note inst. in remarks column
Test sheet
                   : SOF 2,5 M
                                                    Low-idle speed regulation:
                   : 15.12.86
Edition
                   : 6.86
replaces
                                                                  1/min: 400
                                                    Speed
                                                    Del.quantity cm3/
1000H.: 11.0...15.0
Dispersion...... cm3/: 2.5
1000H.: (3.0)
                  : ISO 4113
Calibrating oil
                   : VE 4/9F2100 R214
Injection pump
                   : 0 460 494 173
Type number
                                                    Full-load speed regulation:
Customer-specific information
                                                            1/min: 2410
Customer
                   : SOFIM
                                                    Speed
                                                    Del.quantity cm3/
1000H: 19,0...25,0
                   : 8144.67.2000
Engine
TEST BENCH REQUIREMENTS
                                                    Start:
Calibrating-oil return temp. OC
                                                    Speed
                                                                  1/min: 100
                                                    Del.quantity mind.
                               timini
with thermometer : 40...48
                                ٠.
                                                            cm3/1000H.: 60.0
                  : 42...50
electronically
                                                    Load-dependent start of delivery:
Inlet press., bar: 0.2
                                                                  1/min: 1100
                                                    Speed
Calibrating nozzle-holder
               : 1 688 901 022
 assembly
                                                    Inspection-pump test specifications
                                                    Test specifications in parentheses
Opening
pressure
              bar: 130...133
                                                    Timing-device characteristic:
Test inj. tubing : 1 680 750 073
                                                                  1/min: 700
                                                    1st speed
                                                                     mm: 0.8...1.6
mm: (0.5...1.9)
                                                    TD travel
                   : 6
Outside diameter
x Wall thickness : 2
                                                                  1/min: 1100
                                                    2nd speed
               mm: 450
                                                    TD travel
x Length
                                                                     mm: -
                                                                  mm: (3,0...4,4)
1/min: 2000
Start of delivery
                                                    3rd speed
Prestroke mm: 0.3
                                                    TD travel
                                                                     mm: 8,6...9,4
                                                                     mm: (8,3...9,7)
         (from BDC): +-0.02(0.04)
Injection-pump setting values
                                                    Supply-pump pressure characteristic:
Test specifications in parentheses
                                                                  1/min: 700
                                                    1st speed
Timing-device travel:
                                                    Supply-pump
                                                                    bar: 3,5...4,1
                                                     pressure
                                                                  1/min: 2000
            1/min: 1100
                                                    2nd speed
Setting value mm: 3,5...3,9
                                                    Supply-pump
                                                                    bar: 7,0...7,6
                                                     pressure
Supply-pump pressure:
                                                    Overflow quantity at overflow valve:
             1/min: 1100
                                                                  1/min: 600
Setting value bar: 4,7...5,3
                                                    1st speed
                                                    Oveflow
                                                                       : 41...83
                                                     quantity cm3/10s: (26...98)
Full-load del. w/out charge press.:
                                                                 1/min: 2100
                                                    2nd speed
Speed
            1/min : 1100
```

G05

: 55...138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2610 Del.quantity cm3/: -1000H.: 0...3,0 1/min: 2510 3rd speed Del.quantity cm3/: 6,5...13,5 1000H.: (6,0...14,0) 4th speed 1/min: 2410 Del.quantity cm3/: -1000H.: (18,0...26,0) 1/min: 2100 5th speed Del.quantity cm3/: 41,9...44,9 1000H.: (41,2...45,6) 1/min: 2000 6th speed Del.quantity cm3/: 42,0...45,0 1000H.: (41,3...45,7) 7th speed 1/min: 1100 Del.quantity cm3/: -1000H: (39,8...44,2) 1/min: 600 8th speed Del.quantity cm3/: 36,0...39,0 1000H: (34,5...40,5) Zero delivery (stop): Mech. shutoff: -Speed 1/min: -Del.quantity cm3/: -1000H. Electr. shutoff: Speed 1/min: 2100 ELAB ELAD Deliquantity cms/ 1000H. volt: cm3/: -Idle delivery: 1st speed 1/min: 400 Del.quantity cm3/: -1000H.: (9,0...17,0) 1/min: 450 2nd speed Del.quantity cm3/: 2,0...9,0)
1000H.: (1,0...9,0)
2nd speed 1/min: 700 Del.quantity cm3/: 1,5...7,5 1000H.: (0,5...8,5) 4th speed 1/min: 1000 cm3/: -Deliquantity 1000H.: 0...2,5 Automatic starting fuel delivery: 1/min: 250 1st speed Deliquantity cm3/: -

1000H: 55,0

2nd speed 1/min: 400 Del.quantity cm3/: ax. 1000H: 50,0

Shutoff electromagnet:

Cut-in

min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

/ mm : -

KF mm : 5,2...5,5 MS mm : 1,7...1,9 SVS max. mm : 4,3

Remarks:

ind.

Note inst. in remarks column

Test sheet : PEU 2.5 D
Edition : 3.10.86
replaces : 9.85
Calibrating oil : ISO-4113

Injection pump : VE 4/9F2125 R126-3 Type number : 0 460 494 178

Customer-specific information Customer : PEUGEOT

Engine : XD 3T

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 800

Setting value mm: 5,8...6,2

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 800 Setting value bar: 5,6...6,2

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 800

Del.quantity cm3/	2nd speed 1/min: 750
1000H.: 53,554,5	Charge press. hPa: 800
Dispersion cm3/: 2,5	Supply-pump pressure bar: 3,44,0 3rd speed 1/min: 2000
100011.	3rd speed 1/min: 2000
Full-load del. w/out charge press.:	Charge press. hPa: 800
	Supply-pump
Speed	pressure bar: 7,17,7
Del.quantity cm3/	Overflow eventity at evenflow valves
1000H.: 40,041,00	Overflow quantity at overflow valve:
Low-idle speed regulation:	1st speed 1/min: 500
!	Charge press. hPa: -
Speed 1/min: 400	0veflow : 4183
Del.quantity cm3/ 1000H.: 17,021,0	quantity cm3/10s: (2698) 2nd speed
Dispersion cm3/: 2,0	Charge press. hPa: -
1000H.: -	Overflow : 55138
Full-load speed regulation:	quantity cm3/10s: (40153)
Speed	Delivery august and breakages char :
Charge press. hPa: 800	Delivery-quant. and breakaway char.: 1st speed 1/min: 750
Deliquantity cm3/	Charge-air pressure-setting
1000H: 26,532,5	point hPa: 300
Chanta	LDA stroke mm: 4,5
Start:	Del.quantity cm3/: 47.548.5 1000H.: (45.850.2)
Speed 1/min: 100	2nd speed 1/min: 2650
Del.quantity mind.	Charge press. hPa: 800
cm3/1000H.: 67,0	Deliquantity cm3/:
Therection-numb test specifications	1000H.: 01.0 3rd speed 1/min: 2350
Inspection-pump test specifications Test specifications in parentheses	Charge press. hPa: 800
	Del.quantity cm3/: 26.532.5 1000H.: (25.533.5)
<u>.</u> !	1000H.: (25,533,5)
Timing-device characteristic:	4th speed 1/min: 2250
1st speed 1/min: 750	Charge press. hPa: 800 Del.quantity cm3/: 38,544,5
Charge press. hPa: 800	1000H.: (37,545,5)
TD travel mm: 0,81,6	5th speed 1/min: 2000
mm: (0,51,9)	Charge press. hPa: 800
2nd speed 1/min: 1000 Charge press. hPa: 800	Del.quantity cm3/: 52,054,0 1000H.: (50,855,2)
TD travel mm: 2,53,3	6th speed 1/min: 1500
mm: (2,23,6)	Charge press. hPa: 800
3rd speed 1/min: 1500	Del.quantity cm3/: -
Charge press. hPa: 800 ! TD travel mm: - i	1000H.: (51,856,2) 7th speed 1/min: 1000
mm: (5,36,7)	Charge press. hPa: 800
4th speed 1/min: 2000 1	Del.quantity cm3/: 50,553,5
Charge press. hPa: 800	1000H.: (49,854,2)
TD travel mm: 7,88,6	8th speed 1/min: 750 Charge press. hPa: -
іни. (Грэньор//	Del.quantity cm3/: 41,544,5
Supply-pump pressure characteristic:	1000H: (40,845,2)
	9th speed 1/min: 500
1st speed 1/min: 200	Charge press. hPa: -
Charge press. hPa: 800 Supply-pump	Del.quantity cm3/: - 1000H: (38,342,7)
pressure bar: 1,42,0	, , , , , , , , , , , , , , , , , , , ,
G08	

```
Zero delivery (stop):
Mech. shutoff:
Speed
              1/min: 2125
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
               1/min: 400
Del.quantity cm3/: -
1000H.: (15.0...23.0
2nd speed 1/min: 450
Del.quantity cm3/: 5.0...9.0
1000H.: (3.0...11.0)
3rd speed 1/min: 550
Del.quantity cm3/: -
1000H.: 0...3,5
Automatic starting fuel delivery:
               1/min: 230
1st speed
Del.quantity cm3/: -
 ind.
               1000H: 60,0
2nd speed
               1/min: 330
Del.quantity cm3/: -
               1000H: 60,0
 ax.
Shutoff electromagnet:
Cut-in
min. voltage
                     : 10,0
Rated voltage
                     : 12,0
Mounting and assembly dimensions:
Designation
                     : K1
                M.n
KF
                     : 5,2...5,4
                mm
MS
                mm
                     : 1,2...1,4
                     : 5,5
SVS max.
                mm
                     : 20,2...22,2
: 9,4...12,8
XK
                mm
XL
                mm
Correction at adjusting nut (46)
```

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Note inst. in remarks column 1/min: 375 Speed Del.quantity cm3/ 1000H.: 12,0...14,0 : VWW1,6 W17 Test sheet cm3/: 2_0 Edition : 8.12.86 Dispersion : 12.85 1000H.: (3,0) replaces : ISO 4113 Calibrating oil Residual-Delivery Setting 1/min: 550 Speed Del.quantity cm3/ 1000H.: 2,5...3,5 : VE 4/9F2400 R221 Injection pump Type number : 0 460 494 179 Full-load speed regulation: Customer-specific information Customer Speed 1/min: 2600 Del.quantity cm3/ : 086-1,6 LIT. 1000H: 11,0...17,0 Engine TEST BENCH REQUIREMENTS Start: Calibrating-oil CC 1/min: 100 Speed return temp. Del.quantity mind. with thermometer : 40...48 cm3/1000H.: 35,0 electronically : 42...50 Load-dependent start of delivery: Inlet press., bar: 0.2 Speed 1/min: 1250 Calibrating nozzle-holder : 1 688 901 000 Inspection-pump test specifications assembly Test specifications in parentheses Opening bar: 147...150 pressure Timing-device characteristic: Test inj. tubing : 1 680 750 017 1st speed 1/min: 1000 mm: 1.0...1.8 mm: (0.7...2.1) 1/min: 1250 TD travel Outside diameter x Wall thickness 2nd speed mm: 840 TD travel x Length mm: mm: (1,6...3,0)1/min: 1800 3rd speed Injection-pump setting values mm: 4,2...5,0 mm: (3,9...5,3) Test specifications in parentheses TD travel 1/min: 2400 Timing-device travel: 4th speed mm: 6,1...6,9 mm: (5,8...7,2) TD travel Speed 1/min: 1250 Setting value mm: 2,1...2,5 Supply-pump pressure characteristic: Supply-pump pressure: 1st speed 1/min: 600 Supply-pump Speed 1/min: 1250 bar: 2,1...2,7 Setting value bar: 4,0...4,6 pressure 1/min: 2400 2nd speed Full-load del. w/out charge press.: Supply-pump bar: 7,3...7.9 pressure 1/min : 1500 Speed Overflow quantity at overflow valve: Del.quantity cm3/ 1000H.: 31,5...32,5 cm3/: 2,5 1000H.: (3,0) 1st speed 1/min: 600 Dispersion

G10

```
: 41...83
cm3/10s: (26...98)
1/min: 2400
Oveflow
 quantity
2nd speed
Over flow
                     : 55...138
 quantity cm3/10s: (40...153)
Delivery-quant. and breakaway char.:
1st speed
               1/min: 2800
Del.quantity cm3/: -
1000H.: 0...4,0
3rd speed
                1/min: 2600
Del.quantity cm3/: -
1000H.: (10,0...18,0)
                1/min: 2500
4th speed
Del.quantity cm3/: 19,0...29,0
1000H.: (20,0...28,0)
                1/min: 2400
5th speed
Del.quantity cm3/: 26.7...28.7
1000H.: (25.5...30.1)
6th speed 1/min: 1500
6th speed
Del.quantity cm3/: -
1000H: (29,7...34,3)
                1/min: 600
7th speed
Del.quantity cm3/: 20,2...23,2
              1000H.: (18,7...24,7)
Zero delivery (stop):
Mech. shutoff:
Speed
                1/min: -
Del.quantity cm3/: - 1000H.
Electr. shutoff:
Speed
               1/min: 400
Del.quantity cm3/: - 1000H.
Idle delivery:
                1/min: 375
1st speed
Del.quantity cm3/:
              1000H.: (9,0...17,0)
1/min: 425
2nd speed
Del.quantity cm3/: 5.5...8.5
1000H.: (3.0...11.0)
High Idle:
                1/min: 525
Speed
Del.quantity cm3/: 7,0...9,0
1000H.: -
Residual:
                1/min: 500
Del.quantity . . . 1000H.: -
Speed
                 5,...4 :
Automatic starting fuel delivery:
1st speed
               1/min: 200
```

Del quantity cr3/: 1000H: 35,0 ind. 1/min: 350 2nd speed Del.quantity cm3/: 1000H: 30,0 Shutoff electromagnet: Cut-in : 10,0 min. voltage Rated voltage : 12,0 Mounting and assembly dimensions: Designation : 3,2...3,4 : 5,7...6,0 mm KF mm 1,3...1,5 17,0...19,0 MS mm ХK mm XL 9.8...13,2 mm Setting of residual delivery. emarkš:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Note inst. in remarks column 1/min: 375 Speed Del.quantity cm3/ 1000H.: 12,0...14,0 : VWW 1_6 W15 Test sheet cm3/: 2,0 1000H.: (3,0) : 8.12.86 Edition Dispersion : 12.85 replaces : ISO 4113 Residual-Delivery Setting Speed 1/min: 550 Calibrating oil Del.quantity cm3/ 1000H.: 2,5...3,5 : VE 4/9F2400 R224 Injection pump : 0 460 494 185 Type number Full-load speed regulation: Customer-specific information Customer 1/min: 2600 Speed Del.quantity cm3/ Engine : 086-1,6 LIT. 1000H: 11,0...17,0 TEST BENCH REQUIREMENTS Start: Calibrating-oil OC Speed 1/min: 100 return temp. Deliquantity mind. cm3/1000H.: 35,0 with thermometer : 40...48 : 42...50 electronically Load-dependent start of delivery: Inlet press., bar : 0.2 Speed 1/min: 1250 Calibrating nozzle-holder : 1 688 901 000 Inspection-pump test specifications assembly Test specifications in parentheses Opening pressure bar: 147...150 Timing-device characteristic: Test inj. tubing : 1 680 750 017 1st speed 1/min: 1000 mm: 1,0...1,8 mm: (0,7...2,1 1/min: 1250 TD travel Outside diameter : 6 x Wall thickness 2nd speed x Length mm : 840 TD travel mm: mm: (1,6...3,0)1/min: 1800 3rd speed Injection-pump setting values mm: 4,2...5,0 mm: (3,9...5,3) Test specifications in parentheses TD travel 1/min: 2400 Timing-device travel: 4th speed mm: 6,1...6,9 mm: (5,8...7,2) TD travel 1/min: 1250 Speed Setting value mm: 2,1...2,5 Supply-pump pressure characteristic: Supply-pump pressure: 1/min: 600 1st speed 1/min: 1250 Speed Supply-pump Setting value bar: 4,0...4,6 pressure bar: 2,1...2,7 1/min: 2400 2nd speed Full-load del. w/out charge press.: Supply-pump bar: 7,3...7,9 pressure Speed 1/min : 1500 Del.quantity cm3/ Overflow quantity at overflow valve: 1000H.: 31.5...32,5 cm3/: 2.5 1000H.: (3,0) 1/min: 600 Dispersion 1st speed

G12

```
Oveflow
                     : 41...83
 quantity cm3/10s: (26...98)
               1/min: 2400
2nd speed
Over flow
                     : 55...138
 quantity cm3/10s: (40...153)
Delivery-quant. and breakaway char.:
               1/min: 2800
1st speed
1/min: 2600
3rd speed
Del.quantity cm3/: -
1000H.: (10,0...18,0)
               1/min: 2500
4th speed
Del.quantity cm3/: 19.0...29.0
1000H.: (20.0...28.0)
5th speed
               1/min: 2400
Del.quantity cm3/: 26,7...28,7
1000H.: (25,5...30,1)
6th speed 1/min: 1500
Del.quantity cm3/: -
1000H.: (29,7...34,3)
7th speed
               1/min: 600
Del.quantity cm3/: 20,2...23,2
1000H.: (19,4...24,0)
Zero delivery (stop):
Mech. shutoff:
Speed
               1/min: -
Del.quantity cms/
1000H.
               cm3/: -
Electr. shutoff:
               1/min: 400
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
               1/min: 375
1st speed
Del.quantity cm3/: -
              1000H.: (9,0...17,0
               1/min: 425
2nd speed
Del.quantity cm3/: 5.5...8.5
1000H.: (3,0...11,0)
High Idle:
Speed 1/min: 525
Del.quantity cm3/: 7,0...9,0
1000H.: -
Residual:
               1/min: 500
Speed
Del.quantity
                   5,...4ء :
              1000H.: -
Automatic Starting fuel delivery:
1st speed
               1/min: 200
```

Del.quantity cm3/: -1000H: 35.0 ind. 1/min: 350 2nd speed Del.quantity cm3/: -1000H: 30.0 Shutoff electromagnet: Cut-in min. voltage : 10.0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation 3,2...3,4 mm KF 5,7...6,0 mm 1,3...1,5 3,2 17,0...19,0 9,8...13,2 MS mm SVS max. mm ХK mm mm Setting of residual delivery. emarks:

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column : FOR 1.6 A2 Test sheet : 3.10.86 Edition replaces Calibrating oil : ISO-4113 Injection pump : VE 4/9F2400 R125-2 Type number : 0 460 494 186 Customer-specific information : FORD-KENT Customer Engine : 1.6L. IDI IND. TEST BENCH REQUIREMENTS Calibrating-oil oc return temp. with thermometer: 40...48 electronically : 42...50 Inlet press., bar: 0.2 Calibrating nozzle-holder : 1 688 901 022 assembly Opening bar : 130...133 pressure Test inj. tubing : 1 680 750 073 Outside diameter : 6 x Wall thickness : 2 x Length mm : 450 Injection-pump setting values Test specifications in parentheses Timing-device travel: Speed 1/min: 1500 Setting value mm: 4,3...4,7 KSB solenoid-operated volt: 12,0 Supply-pump pressure: Speed 1/min: 1500 Setting value bar: 5,3...5,9

KSB solenoid-operated valve volt: 12,0 Full-load del. w/out charge press.:

1/min : 1750 Speed

Del.quantity cm3/ 1000H.: 29,5...30,5 KSB solenoid-operated valve volt: 12,0 cm3/: 2,5 Dispersion 1000H.: -Low-idle speed regulation: 1/min: 440 Speed Del.quantity cm3/ 1000H.: 7,0...11,0 KSB solenoid-operated valve volt: 12,0 cm3/: 2,0 Dispersion 1000H.: -Full-load speed regulation: 1/min: 2675 Speed Del.quantity cm3/ 1000H: 7,5...13,5 KSB solenoid-operated valve volt: 12,0 Start: Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 50,0 KSB solenoid-operated valve volt: 12,0

Inspection-pump test specifications Test specifications in parentheses

Timing-device characteristic:

1/min: 1000 1st speed TD travel mm: 1,3...2,1 KSB solenoid-operated volt: 12,0 valve 1/min: 1500 2nd speed TD travel mm: mm: (3,8...5,2) KSB solenoid-operated

volt: 12.0 1/min: 2000 valve 3rd speed mm: 6,8...7₆ TD travel mm: (6,5...7,9)

KSB solenoid-operated volt: 12,0 valve 1/min: 600 4th speed mm: 2,2...4,2 TD travel mm: -

KSB solenoid-operated volt: valve

Supply-pump pressure characteristic:

```
1st speed
               1/min: 600
Supply-pump
                                                       Zero delivery (stop):
                 bar: 3,0...3,6
 pressure
                                                       Mech. shutoff:
KSB solenoid-operated
                volt: 12,0
 valve
                                                                      1/min: 2400
                                                       Speed
                                                       Del.quantity cm3/: -
2nd speed
               1/min: 2000
                                                                     1000H.
Supply-pump
 pressure
                 bar: 6,6...7,2
KSB solenoid-operated
                                                       Idle delivery:
 valve
                volt: 12,0
                                                                      1/min: 440
                                                        1st speed
Overflow quantity at overflow valve:
                                                       KSB solenoid-operated
                                                                       volt: 12,0
                                                         valve
                                                       Del.quantity cm3/: -
1000H.: (5,0...13,0)
1st speed
               1/min: 600
KSB solenoid-operated
                                                                      1/min: 475
 valve
                volt: 12,0
                                                       2nd speed
                    : 41...8,3
Oveflow |
                                                       KSB solenoid-operated
                                                       valve volt: 12.0
Del.quantity cm3/: 2.5...7.5
1000H.: (1.0...9.0)
 quantity cm3/10s: (26...98)
              1/min: 2400
2nd speed
KSB solenoid-operated
                volt: 12.0
: 55...138
 valve
                                                                      1/min: 570
                                                       3rd speed
Over flow
                                                       KSB solenoid-operated
 quantity cm3/10s: (40...153)
                                                         valve
                                                                       volt: 12,0
                                                       Del.quantity cm3/: -
                                                                     1000H.: 0...3,5
Delivery-quant. and breakaway char.:
1st speed
              1/min: 2950
KSB solenoid-operated
                                                       Arrangement of drivers on engine-
                                                       speed lever for exhaust-gas-
                volt: 12,0
 valve
Del.quantity cm3/: - 1000H.: 0...2,0
                                                       recirculation valve linkage (guage)
               1/min: 2675
                                                                      1/min: 1100
2nd speed
                                                       1st speed
KSB solenoid-operated
                                                       KSB solenoid-operated
                volt: 12,0
                                                                       volt: 12,0
 valve
                                                         valve
Del.quantity cm5/: -
1000H.: (6,5...14,5)
                                                       Del.quantity cm3/: 12,0..13,0
                                                                     1000H.: -
               1/min: 2550
3rd specifi
KSB solenoid-operated
                                                       Automatic starting fuel delivery:
                volt: 12,0
 valve
Del.quantity cm3/: 18.5...26.5
1000H.: (18.5...26.5)
                                                                      1/min: 400
                                                       1st speed
                                                       KSB solenoid-operated
               1/min: 2400
4th speed
                                                         valve
                                                                       volt: 12,0
                                                       Del.quantity cm3/: -
KSB solenoid-operated
valve volt: 12.0
Del.quantity cm3/: 28.1...30.1
1000H.: (26.9...31.3)
                                                                      1000H: 30,0
                                                         ind.
                                                                      1/min: 500
                                                       2nd speed
                                                       KSB solenoid-operated
               1/min: 1750
5th speed
                                                                       volt: 12,0
KSB solenoid-operated
                                                         valve
                volt: 12,0
                                                       Del.quantity
 valve
                                                                       cm3/:
Del.quantity cm3/: -
1000H.: (27,8...32,2)
                                                                      1000H: 30,0
               1/min: 1000
                                                       Shutoff electromagnet:
6th speed
KSB solenoid-operated
valve volt: 12,0
Del.quantity cm3/: 26,0...29,0
1000H.: (25,3...29,7)
                                                       Cut-in
                                                        min. voltage
                                                                            : 10,0
                                                       Rated voltage
                                                                            : 12,0
7th speed
               1/min: 600
KSB solenoid-operated
                                                       Mounting and assembly dimensions:
valve volt: 12,0
Del.quantity cm3/: 24,0...27,0
1000H.: (22,5...28,5)
                                                       Designation
                                                                       mm : 3,2-3,4
G15
```

KF MS

mm : 5,7-6,0 mm : 1,6-1,85

Del.quantity cm3/ 1000H.: 47.5...48,5 Dispersion cm3/: 2,5 BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column 1000H : (3,0) Test sheet : FIA 1,7 P Full-load del. w/out charge press.: Edition : 18.12.86 replaces Speed 1/min: 800 Del.quantity cm3/ 1000H.: 34,8...35,8 Calibrating oil : ISO 4113 Injection pump : Ve 4/9F2100 R234 : 0 460 494 187 Low-idle speed regulation: Type number Customer-specific information 1/min: 350 Speed : FIAT REGATA Charge press. hPa: -Customer Del.quantity cm3/ 1000H.: 16.0...20.0 Dispersion cm3/: 2.5 1000H.: (3.0) : x8/45 Engine TEST BENCH REQUIREMENTS Full-load speed regulation: Calibrating-oil C Speed 1/min: 2400 Charge press. hPa: 1000 return temp. with thermometer : 40...48 : 42...50 electronically Deliquantity cm3/ 1000H: 15,0...21,0 Inlet press., bar: 0.2 Start: Calibrating nozzle-holder assembly : 1 688 901 022 Speed 1/min: 100 Del quantity mind. Opening cm3/1000H.: 57,0 pressure bar : 130...133 Load-dependent start of delivery: Test inj. tubing : 1 680 750 073 1/min: 1500 Speed Charge press. hPa: -Outside diameter : 6 x Wall thickness : 2 Inspection-pump test specifications mm : 450 Test specifications in parentheses x Length Injection-pump setting values Test specifications in parentheses Timing-device characteristic: 1/min: 800 Timing-device travel: 1st speed Charge press. hPa: 1000 TD travel mm: 1.0...1.8 mm: (0.7...2.1) Speed 1/min: 1590 Charge press. hPa: 1000 Setting value mm: 4,9...5,3 2nd speed 1/min: 1500 Charge press. hPa: 1000 TD travel Supply-pump pressure: mm: mm: (4,4...5,8)1/min: 2000 1/min: 1500 3rd speed Charge press. hPa: 1000 Setting value bar: 5,6...6,2 Charge press. hPa: 1000 mm: 7,4...8,2 mm: (7,1...8,5) TD travel Full-load del. with charge press.: Supply-pump pressure characteristic: 1/min: 1500 Speed Charge press. hPa: 1000 1st speed 1/min: 400 Charge press. hPa: 1000

G17

Supply-pump bar: 2,2...2,8 1/min: 800 pressure Zero delivery (stop): 2nd speed Charge press hPa: 1000 Mech. shutoff: Supply-pump 1/min: 2100 Speed bar: 3,5...4,1 Del.quantity cm3/: pressure 1000H. 3rd speed 1/min: 2000 Charge press. hPa: 1000 Supply-pump Idle delivery: bar: 7,0...7,6 pressure 1/min: 350 1st speed Del.quantity cm3/: -1000H.: (14,0..22,0) Overflow quantity at overflow valve: 1/min: 400 1st speed 1/min: 600 2nd speed Del.quantity cm3/: 4,5...10,5 1000H.: (3,5...11,5) Charge press. hPa: -Oveflow : 41...83 1/min: 500 quantity cm3/10s: (26...98) 3rd speed 2nd speed 1/min: 2100 Del.quantity cm3/: -Charge press. hPa: 1000 Overflow : 55... 1000H.: 0...3,0 : 55...138 quantity cm3/10s: (40...153) Automatic starting fuel delivery: 1/min: 300 1st speed Delivery-quant. and breakaway char.: 1st speed 1/min: 800 Del.quantity cm3/: -1000H: 55,0 Charge-air pressure-setting ind. point hPa: 300
Del.quantity cm3/: 39,5...40,5
1000H.: (37,8...40,2)
2nd speed 1/min: 2550
Charge press 1000 2nd speed 1/min: 500 Del.quantity cm3/: -1000H: 40,0 Charge press. hPa: 1000 Del.quantity cm3/: -Shutoff electromagnet: 1000H.: 0...7,0 Cut-in 1/min: 2400 3rd speed : 10,0 Charce press. hPa: 1000 min. voltage Del.quantity cm3/: -1000H.: (14,0...22,0) 4th speed 1/min: 2300 Rated voltage : 12,0 Mounting and assembly dimensions: Charge press. hPa: 1000 Del.quantity cm3/: 25.5...32.5 1000H.: (25.0...33.0) Designation : 3,2...3,4 K mm 1/min: 2100 KF mm 5th speed Charge press. hPa: 1000 Del.quantity cm3/: 46.5...49.5 1000H.: (45.8...50.2) 65,1.4.1: MS mm SVS max. mm . 17,0...19,0 ХK mm 1/min: 1500 XL 0ر14...6ر : 6th speed mm Charge press. hPa: 1000 Del.quantity cm3/: -1000H.: (45,8...50,2) Correction at adjusting nut (46) 1/min: 800 7th speed Charge press. hPa: 1000 Del.quantity cm3/: 49,5...52,5 1000H.: (48,8...53,2) 1/min: 800 8th speed Charge press. hPa: -Del.quantity cm3/: -1000H: (33,1...37,5) 1/min: 600 9th speed Charge press. hPa: Del.quantity cm3/: 34,6...37,0 1000H: (32,8...38,8)

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Speed Note inst. in remarks column 1/min: 375 Del.quantity cm3/ 1000H.: 8,5...10,5 Test sheet : PEU 1,9 F cm3/: 2,0 1000H.: (3,0) Edition : 16.12.86 Dispersion replaces Calibrating oil : ISO 4113 Residual-Delivery Setting 1/min: 550 Speed Injection pump : VE 4/9F2300 R237 Del.quantity cm3/ 1000H.: 2,5...3,5 : 0 460 494 188 Type number Full-load speed regulation: Customer-specific information Customer : PEUGEOT 1/min: 2400 Speed Del.quantity cm3/ : XUD 9 1000H: 20,0...26,0 Engine TEST BENCH REQUIREMENTS Start: Calibrating-oil 1/min: 100 Speed Del.quantity mind. return temp. with thermometer : 40...48 cm3/1000H.: 44,0 electronically : 42...50 Load-dependent start of delivery: Inlet press., bar: 0.2 Speed 1/min: 1250 Calibrating nozzle-holder Inspection-pump test specifications Test specifications in parentheses : 1 688 901 022 assembly Opening bar: 130...133 pressure Timing-device characteristic: 1st speed 1/min: 700 Test inj. tubing : 1 680 750 073 TD travel mm: 0,9...1,7 : 6 mm: (0,6...2,0)Outside diameter 1/min: 1250 x Wall thickness : 2 2nd speed mm: 450 TD travel x Length mm: mm: (2,7...4,1)1/min: 2000 Injection-pump setting values 3rd speed Test specifications in parentheses TD travel mm: 6,4...7₂2 mm: (6, 1, ..., 7, 5)Timing-device travel: Supply-pump pressure characteristic: 1/min: 1250 Setting value mm: 3,2...3,6 1st speed 1/min: 700 Supply-pump bar: 2,5...3,1 Supply-pump pressure: pressure 1/min: 2000 2nd speed 1/min: 1250 Speed Supply-pump bar: 5,7...6,3 Setting value bar: 3,9...4,5 pressure Overflow quantity at overflow valve: Full-load del. w/out charge press.: 1/min: 700 1/min : 1250 1st speed Speed Del.quantity cm3/ Oveflow. : 41...83 1000H.: 30,0...31,0 cm3/10s: (26...98) quantity cm3/: 2,5 1000H.: (3,0) 2nd speed 1/min: 2300 Dispersion

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: 55..138 Overflow quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2650 Del.quantity cm3/: -1000H.: 0...7,0 1/min: 2500 3rd speed Del.quantity cm3/: 10,0...16,0 1000H.: (9,0...17,0) 4th speed 1/min: 2400 Del.quantity cm3/: -1000H.: (19,0...27,0) 1/min: 2250 5th speed Del.quantity cm3/: 30,5...32,5 1000H.: (29,3...33,7) 1/min: 2000 6th speed Del.quantity cm3/: 32,0...35,2)
7th speed 1/min: 1250 Del.quantity cm3/: 1000H.: (28,3...32,7)

Ath speed 1/min: 700
7/: 30 0...33,0 Del.quantity cm3/: 30,0...33,0 1000H: (28,5...34,5) Zero delivery (stop): Mech. shutoff: Speed 1/min: 2300 Del.quantity cm3/: -1000H. Idle delivery: 1/min: 375 1st speed Del.quantity cm3/: -1000H.: (5,5...13,5) High Idle: 1/min: 470 Speed Del.quantity cm3/: 8,0...10,0 1000H.: (5,0...13,0) Residual: 1/min: 550 Speed Del.quantity 1000H.: 0...7,0 Arrangement of drivers on enginespeed lever for exhaust-gasrecirculation valve linkage (guage) 1st speed 1/min: 1125 Del.quantity cm3/: 18,0..20,0 1000H.: -Automatic starting fuel delivery: 1/min: 200 1st speed

Del.quantity cm3/: -1000H: 40,0 ind. 1/min: 300 2nd speed Del.quantity cm3/: -1000H: 35.0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation : 3,2...3,4 mm KF : 5,7...6,0

mm

mm : 1,3..1,55 MS mm

SVS max. Remarks:

Note inst. in remarks column

Test sheet : SOF 2.5 N Edition : 19.12.86 replaces : 4.86 Calibrating oil : ISO 4113

Injection pump : VE 4/9F2100 R22-7 Type number : 0 460 494 189

Customer-specific information Customer : SOFIM

: 8144.67.220 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 000

Opening |

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 x Length mm : 840 x Length

Start of delivery

Prestroke mm: 0,3 (from BDC): +-0,02(0,04)

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1800 Speed Setting value mm: 7,6...8,0

Supply-pump pressure:

Speed 1/min: 1800 Setting value bar: 6,3...6,9

Full-load del. w/out charge press.:

Speed 1/min: 1000

Del.quantity cm3/	Del.quantity cm3/: -
1000H.: 36,937,9	1000H.: 04,5
Dispersion cm3/: 2,5	3rd speed 1/min: 2350
1000H.: (3,0)	Del.quantity cm3/: - 1000H.: (17.525,5)
	1000H.: (17,525,5)
Low-idle speed regulation:	ATD Speed 1/Min: /1UU
	Del.quantity cm3/: 36.138.7 1000H.: (35.139.,7)
Speed	1000H.: (35,139,,7)
Del.quantity cm3/	5th speed 1/min: 1000
1000H.: 8,012,0	Del.quantity cm3/: - 1000H.: (35,139,7)
Dispersion cm3/: 2,5	1000H.: (35,139,7)
1000H.: (3,0)	6th speed 1/min: 1100
Full-load speed regulation:	Del.quantity cm3/: 42,545,5 1000H.: (41,746,3)
Speed 1/min: 2350	7th speed 1/min: 600
Del.quantity cm3/	Del.quantity cm3/: 34,337,3
1000H: 18,524,5	1900H.: (32,838,8)
Start:	Zero delivery (stop):
Speed	Mech. shutoff:
Del.quantity mind.	Speed 1/min: 2100
cm3/1000H.: 55,0	Del.quantity cm3/: - 1000H.
Inspection-pump test specifications	100011:
Test specifications in parentheses	Idle delivery:
1	•
	1st speed 1/min: 370
Timing-device characteristic:	Del.quantity cm3/: -
1454 5554 4 4 555 400	1000H.: (6,014,0)
1st speed 1/min: 600	2nd speed 1/min: 420 ,
TD travel mm: 0,91,7	Del.quantity cm3/: - 1000H.: 01,5
mm: (0,62,0)	3rd speed 1/min: 500
TD travel mm: -	Del.quantity cm3/: -
mm: (7,18,5)	1000H.: 03,0
3rd speed 1/min: 2000	·
TD travel mm: 8,39,1	Automatic starting fuel delivery:
mm: (8,09,4)	4
Constant and a second share sh	1st speed 1/min: 400
Supply-pump pressure characteristic:	Del.quantity cm3/: -
1st speed 1/min: 600	ind. 1000H: 37,0
Supply-pump	2nd speed 1/min: 480
pressure bar: 3,23,8	Timing valve volt: -
2nd speed 1/min: 2000	Del.quantity cm3/: 32,038,0
Supply-pump I	
pressure bar: 6,76,3	Shutoff electromagnet:
Overflow quantity at everflow valves	Cut-in
Overflow quantity at overflow valve:	Cut-in min. voltage : 10,0
1st speed 1/min: 600	Rated voltage : 12,0
Oveflow : 4183	
quantity cm3/10s: (2698)	Mounting and assembly dimensions:
2nd speed 1/min: 2100	•
Overflow	Designation
quantity cm3/10s: (40153)	K mm:-
Dalivary august and brooksupy about	KF mm : 5,45,7
Delivery-quant. and breakaway char.:	MS mm : 1,71,9
1st speed 1/min: 2500	

Remarks:	<u> </u>
	[
	<u> </u>
	! !
	<i>2</i>
G23	

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Note inst. in remarks column

Test sheet : FIA 1.7 P1 Edition : 18.12.86

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/9F2400 R242 Type number : 0 460 494 193

Customer-specific information

Customer : FIAT

Engine : X8/57

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length mm : 450

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value mm: 4,9...5,3

Supply-pump pressure:

Speed 1/min: 1500 Charge press. hPa: 1000 Setting value bar: 5,5...6,1

Full-load del. with charge press.:

Speed 1/min: 1500 Charge press. hPa: 1000 Del.quantity cm3/ Supply-pump 1000H: 35,5...36,5 cm3/: 3,0 bar: 3,6...4,2 1/min: 1500 pressure Dispersion 2nd speed 1000H : -Charge press. hPa: 1000 Supply-pump Full-load del. w/out charge press.: bar: 5,5...6,1 1/min: 2400 pressure 4th speed 1/min : 750 hPa: 1000 Speed Charge press. Del.quantity cm3/ Supply-pump 1000H.: 25,3...26,3 bar: 7,6...8,2 pressure Low-idle speed regulation: Overflow quantity at overflow valve: 1/min: 350 1/min: 750 Speed 1st speed Charge press. hPa: -Charge press. hPa: Del quantity cm3/ Oveflow quantity cm3/10s: (26...98)
2nd speed 1/min: 2400
Charge press. hPa: 1000
Overflow: 55...138 1000H.: 12.0...18.0 cm3/: 2.5 1000H.: (3.0) Dispersion Full-load speed regulation: quantity cm3/10s: (40...153) 1/min: 2650 Speed Charge press. hPa: 1000 Delivery-quant. and breakaway char.: Del.quantity cm3/ 1000H: 17,0...23,0 1st speed 1/min: 1100 Charge-air pressure-setting hPa: 400 point Del.quantity cm3/: 29.5...30.5 1000H.: (27.8...32.2) 2nd speed 1/min: 2850 Start: Speed 1/min: 100 Charge press. hPa: 1000 Del.quantity mind. Del.quantity cm3/: -1000H.: 0...6,0 cm3/1000H.: 48,0 1/min: 2650 Load-dependent start of delivery: 3rd speed Charge press. hPa: 1000
Del.quantity cm3/: 1000H.: (16,0...24,0)
Sth speed 1/min: 2400 Speed 1/min: 1500 Charge press. hPa: -Charge press. hPa: 1000
Del.quantity cm3/: 35,0...38,0
1000H.: (32,5...40,5) Inspection-pump test specifications Test specifications in parentheses 1/min: 1500 6th speed Charge press. hPa: 1000 Timing-device characteristic: Del.quantity cm3/: -1000H.: (33,8...38,2) 1/min: 750 1st speed 1/min: 1100 Charge press. hPa: 1000 7th speed Charge press. hPa: Del.quantity cm3/: 24,3...26,7
1000H.: (23,3...27,7)
8th speed 1/min: 750 mm: 1,3...2,1 TD travel mm: (1,0...2,4)
2nd speed 1/min: 1500
Charge press. hPa: 1000
TD travel TD travel Charge press. hPa: mm: Del.quantity cm3/: mm: (4,4...5,8)1/min: 2400 1000H: (22,8...28,8) 3rd speed Charge press. hPa: 1000 mm: 8,5...9,3 TD travel Zero delivery (stop): mm: (8,2...9,6)Mech. shutoff: 1/min: 2400 Supply-pump pressure characteristic: Speed Del.quantity cm3/: - 1000H. 1st speed 1/min: 750 Charge press. hPa: 1000

```
Idle delivery:
1st speed
             1/min: 350
Del.quantity cm3/: 1000H.:
                      (11,0..19,0)
2nd speed
              1/min: 400
Del.quantity cm3/: 4.0...8.0
1000H.: (2,0...10,0)
              1/min: 520
3rd speed
Del.quantity cm3/: -
1000H.: 0...3,0
Automatic starting fuel delivery:
1st speed
              1/min: 250
Del.quantity cm3/: -
              1000H: 40,0
 ind.
2nd speed
              1/min: 350
Del.quantity cm3/:
              1000H: 34,0
Shutoff electromagnet:
Cut-in
min. voltage
                    : 10,0
Rated voltage
                    : 12,0
Mounting and assembly dimensions:
Designation
                   : 3,2...3,4
               mm
KF
               mm
                   : 1,4..1,65
MS
               mm
SVS max.
               mm
                   : 17,0...19,0
: 9,1...12,5
XK
               mm
XL
               mm
Correction at adjusting nut (46)
```

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : PEU 1,9 D Edition : 02.04.87 replaces Calibrating oil : ISO 4113 : VE 4/9F2300 R162-1 Injection pump Type number : 0 460 494 195 Customer-specific information Customer : PEUGEOT Engine : XUD9 TEST BENCH REQUIREMENTS Calibrating-oil OC / return temp. with thermometer : 40...48 : 42...50 electronically Inlet press., bar: 0.2 Calibrating nozzle-holder : 1 688 901 022 assembly Opening bar: 130...133 pressure Test inj. tubing : 1 680 750 073 Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length Injection-pump setting values Test specifications in parentheses Timing-device travel: 1/min: 1250 Setting value mm: 3,2...3,6 Supply-pump pressure: Speed 1/min: 1250 Setting value bar: 3,9...4,5 Full-load del. w/out charge press.: 1/min : 1250 Speed

Del.quantity cm3/ 1000H.: 29.5...30,5 cm3/: 2.5 1000H.: (3,0) Dispersion **G27**

Low-idle speed regulation: Speed 1/min: 375 Del.quantity cm3/ 1000H.: 8,5...10,5 cm3/: 2,0 Dispersion 1000H.: (3,0) Residual-Delivery Setting Speed 1/min: 550 Del.quantity cm3/ 1000H.: 2,5...3,5 Full-load speed regulation: 1/min: 2400 Speed Del.quantity cm3/ 1000H: 20,0...26,0 Start: Speed 1/min: 100 Del.quantity mind. cm3/1000H.: 44_0 Load-dependent start of delivery: Speed 1/min: 1250 Inspection-pump test specifications Test specifications in parentheses Timing-device characteristic: 1/min: 800 1st speed mm: 0.7...1.5 mm: (0.4...1.8) 1/min: 1250 TD travel 2nd speed TD travel mm:

mm: (2,7...4,1) 1/min: 2000 3rd speed mm: 7,5...8,3 mm: (7,2...8,6) ID travel

Supply-pump pressure characteristic:

1/min: 800 1st speed Supply-pump bar: 2,6...3,2 pressure 1/min: 2000 2nd speed Supply-pump pressure bar: 5,9...6,5

Overflow quantity at overflow valve:

1/min: 500 1st speed Oveflow : 41...83 cm3/10s: (26...98) quantity 2nd speed 1/min: 2300

```
Overflow
                     : 55...138
 quantity cm3/10s: (40...153)
Delivery-quant. and breakaway char.:
               1/min: 2650
1st speed
Del.quantity cm3/: -
1000H.: 0...7,0
               1/min: 2500
3rd speed
Del.quantity cm3/: 11.5...17.5
1000H.: (10.5...18.5)
               1/min: 2400
4th speed
Del.quantity cm3/: -
1000H.: (19,0...27,0)
               1/min: 2250
5th speed
Del.quantity cm3/: 31.0...33.0
1000H.: (29.8...34.2)
               1/min: 2000
6th speed
Del.quantity cm3/: 31,5...33,5
1000H.: (30,3...34,7)
               1/min: 1250
7th speed
Del.quantity
                cm3/: -
              1000H.: (27,8...32,2)
               1/min: 800
8th speed
               cm3/: 30,5...33,5
Del.quantity
               1000H: (29,0...35,0)
               1/min: 500
cm3/: 29,5...32,5
1000H: (28,0...34,0)
9th speed
Del.quantity
Zero delivery (stop):
Mech. shutoff:
Speed
               1/min: -
Del.quantity cm3/: - 1000H.
Electr. shutoff:
               1/min: 2300
Speed
ELAB
                volt: -
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
               1/min: 375
Del.quantity cm3/: -
              1000H.: (5,5...13,5)
High Idle:
               1/min: 470
Speed
               cm3/: 8,0...10,0
Del quantity
              1000H.: (5,0...13,0)
Residual:
               1/min: 550
Speed
Del. quantity
              1000H.: 0...7,0
Automatic starting fuel delivery:
1st speed
               1/min: 200
```

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Del.quantity cm3/: -1000H: 40,0 ind. 2nd speed 1/min: 300 cm3/: -Del.quantity 1000H: 35,0 Shutoff electromagnet: Cut-in : 10,0 min. voltage Rated voltage : 12,0 Mounting and assembly dimensions: Designation 3,2...3,4 mm KF 5,7...6.0 mm MS mm : 3.0 : 17.0...19.0 SVS max. mm XK mm : 11,5...14.9 XL mm Setting of residual delivery.

Idle setting (LFG) according to VDT-I-460/135.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Note inst. in remarks column 1/min: 390 Speed Del.quantity cm3/ 1000H.: 10.0..14.0 Dispersion cm3/: 2.5 1000H.: (3.0) Test sheet : FIA 1,3 B : 18.12.86 Edition : 4.86 replaces Calibrating oil : ISO 4113 Full-load speed regulation: : VE 4/9F2300 R207-1 Injection pump 1/min: 2450 Speed Del.quantity cm3/ 1000H: 19,0...25,0 : 0 460 494 196 Type number Customer-specific information Customer : FIAT-RITMO Start: Engine : x8/34 1/min: 100 Speed Del.quantity mind. TEST BENCH REQUIREMENTS cm3/1000H.: 55,0 Calibrating-cil Load-dependent start of delivery: return temp. with thermometer : 40...48 Speed 1/min: 1500 electronically : 42...50 Inspection-pump test specifications Inlet press., bar: 0.2 Test specifications in parentheses Calibrating nozzle-holder : 1 688 901 022 assembly Timing-device characteristic: Opening 1/min: 800 1st speed pressure bar : 130...133 TD travel mm: 1,6...2,4 mm: (1,3...2,7)1/min: 1500 2nd speed Test inj. tubing : 1 680 750 073 TD travel mm: mm: (3,6...5,0) 1/min: 2300 mm: 7,0...7,8 Outside diameter : 6 3rd speed x Wall thickness : 2 TD travel mm: 450 mm: (6,7...8,1)x Length Injection-pump setting values Supply-pump pressure characteristic: Test specifications in parentheses 1/min: 600 1st speed Supply-pump Timing-device travel: bar: 3,1...3,7 1/min: 2300 pressure 1/min: 1500 2nd speed Setting value mm: 4,1...4,5 Supply-pump bar: 7,2...7,8 pressure Supply-pump pressure: Overflow quantity at overflow valve: 1/min: 1500 Setting value bar: 5,3...5,9 1st speed 1/min: 600 vvetlow : 41...83
quantity cm3/10s: (26...98)
2nd speed 1/min: 2300
Overflow Full-load del. w/out charge press.: : 55...138 1/min : 1500 Over flow Speed Del.quantity cm3/ 1000H.: 29,5...30,5 Dispersion cm3/: 2,5 1000H.: (3,0) quantity cm3/10s: (40...153) Delivery-quant. and breakaway char.: 1st speed 1/min: -H01

```
Del.quantity cm3/: - 1000H.: -
               1/min: 2900
2nd speed
Del.quantity cm3/: -
1000H.: 0...1,5
3rd speed
               1/min: 2650
Del.quantity cm3/: 2,0...9,0
1000H.: (1,5...9,5)
4th speed 1/min: 2450
4th speed
Del.quantity cm3/:
              1000H.: (18,0...26,0)
5th speed 1/min: 2300
Del.quantity cm3/: 31.8...34.2
1000H.: (30.8...35.2)
               1/min: 1500
6th speed
Del.quantity cm3/: -
1000H.: (27,8...32,2)
               1/min: 1000
7th speed
Del.quantity cm3/: 29.8...32.2
1000H.: (28,7...33,3)
               1/min: 600
8th speed
Del quantity
                cm3/: 30,0...33,0
               1000H: (28,5...34,5)
Zero delivery (stop):
Mech. shutoff:
               1/min: 2300
Speed
Del.quantity cm3/: - 1000H.
Idle delivery:
1st speed
               1/min: 390
Del.quantity cm3/: 1000H.:
               cm3/:
                       (8,0...16,0)
               1/min: 440
2nd speed
Del.quantity cm5/: 1,0...3,0)
               1/min: 500
3rd speed
Del.quantity cm3/: -
1000H.: 0...1,5
Automatic starting fuel delivery:
1st speed
               1/min: 300
Del.quantity cm3/: -
               1000H: 48,0
 ind.
2nd speed
               1/min: 400
Del.quantity cm3/: -
               1000H: 45,0
 ax.
Shutoff electromagnet:
Cut-in
                     : 10,0
min. voltage
Rated voltage
                     : 12,0
Mounting and assembly dimensions:
```

H₀2

Designation K mm : 3,2...3,4 KF mm : 5,7...5,9 MS mm : 1,7...1,9 SVS max. mm : 2,8

Note inst. in remarks column

Test sheet : OPE 2,3 M : 12.12.86 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/9F2200 L243 Type number : 0 460 494 197 : 0 460 494 197 Type number

Customer-specific information

Customer : OPEL

Engine : 2.3 LIT.

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.3

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

pressure bar : 147...150

Test in i. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1200 Setting value mm: 4,3...4,7

Supply-pump pressure:

Speed 1/min: 1200 Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

1/min : 1200 Speed

Del.quantity cm3/

1000H.: 43,0..44,0

cm3/: 3.0Dispersion

1000H.: -

	2nd speed 1/min: 2200
Low-idle speed regulation:	0verflow : 55138 quantity cm3/10s: (40153)
Speed 1/min: 270	quarter cy chier root. Works 1507
Del.quantity cm3/	Delivery-quant. and breakaway char.:
1000H.: 10,014,0 I Dispersion cm3/: 2,5	1st speed 1/min: 2700 Del.quantity cm3/: -
1000H.: (3,0)	1000H.: 03,0
Full-load speed regulation:	3rd speed 1/min: 2600
Const. 4(vin. 2/50)	Del.quantity cm3/: 4,012,0
Speed 1/min: 2450 Deliquantity cm3/	1000H.: (4,012,0) 4th speed 1/min: 2450
1000H: 21,027,0	Del.quantity cm3/: -
	1000H.: (20,028,0)
Start:	5th speed 1/min: 2200 Del.quantity cm3/: 34,837,8
Speed 1/min: 100	1000H.: (34,038,6)
Del.quantity mind.	6th speed 1/min: 1200
cm3/1000H.: 52,0	Del.quantity cm3/: -
Load-dependent start of delivery:	1000H.: (41,245,8) 7th speed 1/min: 600
Louis dopondon o blan e on do tivory.	Del.quantity cm3/: 33,536,5
Speed 7/min: 1200	1000H.: (32,038,0)
Inspection-pump test specifications	Zero delivery (stop):
Test specifications in parentheses	·
	Mech. shutoff:
Timing-device characteristic:	Speed 1/min: - Del.quantity cm3/: -
Triming device character is the.	1000H.
1st speed 1/min: 600	Clark allowers
TD travel mm: 0,61,4 mm: (0,31,7)	Electr. shutoff: Speed 1/min: 2200
2nd speed 1/min: 800	ELAB volt: -
To travel mm: 1,92,7	Del.quantity cm3/: -
mm: (1,63,0) 3rd speed 1/min: 1200	1000н.
TD travel mm: -	Idle delivery:
mm: (3,84,2)	•
4th speed 1/min: 2200 TD travel mm: 9.710.5	1st speed 1/min: 270
TD travel mm: 9,710,5 mm: (9,410,8)	Del.quantity cm3/: - 1000H.: (8,016,0)
1	2nd speed 1/min: 320
Supply-pump pressure characteristic:	Del.quantity cm3/: 3,09,0
1st speed 1/min: 600	1000H.: (2,010,0) 3rd speed 1/min: 400
Supply-pump 1	Del.quantity cm3/: -
pressure bar: 2,43,0	1000H.: 02,5
2nd speed 1/min: 800	Automatic starting fuel delivery:
Supply-pump pressure bar: 3,03,6	Advonacie starting ruet detrivery.
3rd speed 1/min: 2200	1st speed 1/min: 130
Supply-pump	Del.quantity cm3/: - ind. 1000H: 52,0
pressure bar: 6,57,1	ind. 1000H: 52,0
Overflow quantity at overflow valve:	2nd speed 1/min: 230
1st speed 1/min: 600	Del.quantity cm3/: - ax. 1000H: 35,0
1st speed 1/min: 600 ! 0veflow : 4183 !	ax. 1000H: 35,0
quantity cm3/10s: (2698)	Shutoff electromagnet:
H04	
HUT	

Cut-in

min. voltage : 10.0 Rated voltage : 12.0

Mounting and assembly dimensions:

Designation

K KF MS mm : 3,2...3,4 mm : 5,7...6,0 mm : 1,8..2,05

SVS max.

mm : -mm : 17.0...19.0 mm : 9,7...13,4 ΧK XL

Note inst. in remarks column

Test sheet : REN 2,0F1 : 02.04.87 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/9F2250 R158-1 Type number : 0 460 494 198

Type number

Customer-specific information : RENAULT Customer

: J8S-A01 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.3

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening |

pressure bar: 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x ingth

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1400 Setting value mm: 4,4...4,8

Supply-pump pressure:

1/min: 1400 Setting value bar: 4,9...5,5

Full-load del. w/out charge press.:

1/min : 1400 Speed

Del.quantity cm3/

1000H.: 35.0...36,0 cm3/: 2.5 1000H.: (3,0)

Dispersion

	Del.quantity cm3/: -
Low-idle speed regulation:	1000H.: 05,0
Speed 1/min: 425	3rd speed 1/min: 2400 Del.quantity cm3/: -
Del.quantity cm3/	1000H.: (16,024,0)
1000H.: 7,011,0	4th speed 1/min: 2200
Dispersion cm3/: 2,5 1 1000H.: (3,0)	Del.quantity cm3/: 37,039,0
Full-load speed regulation:	1000H.: (35,740,3) 5th speed 1/min: 2100
	Del.quantity cm3/: 37,539,5 1000H.: (36,240,8)
Speed 1/min: 2400	1000H.: (36,240,8) 6th speed 1/min: 1400
Del.quantity cm3/ 1 1000H: 17,023,0 1	Del.quantity cm3/:
1	1000H.: (33,237,8)
Start:	7th speed 1/min: 1000 Del.quantity cm3/: 34,037,0
Speed 1/min: 100	1000H.: (33,237,8)
Del.quantity mind.	Zana dalibuan dahari
cm3/1000H.: 52,0	Zero delivery (stop):
Load-dependent start of delivery:	Mech. shutoff:
Social 1/min: 1/00	Speed 1/min: -
Speed 1/min: 1400	Del.quantity cm3/: - 1000H.
Inspection-pump test specifications !	~
Test specifications in parentheses	Electr. shutoff: Speed 1/min: 425
i	ELAB volt: -
Timing-device characteristic:	Del.quantity cm3/: 3 1000H.
1st speed 1/min: 1000	100011.
TD travel mm: 2,63,4_	Idle delivery:
mm: (1,33,7)	1st speed 1/min: 425
TD travel mm: -	Del.quantity cm3/: -
mm: (3,95,3)	1000H.: (5,013,0)
3rd speed	2nd speed 1/min: 650 Del.quantity cm3/: -
mm: (6,47,8)	1000H.: 05,0
Supply-pump pressure characteristic:	Automatic starting fuel delivery:
1st speed 1/min: 1000	1st speed 1/min: 370
Supply-pump I	Del.quantity cm3/: -
pressure bar: 3,94,5 2nd speed 1/min: 2000	ind. 1000H: 45,0
Supply-pump	2nd speed 1/min: 480
pressure bar: 6,571	Del.quantity cm3/: -
Overflow quantity at overflow valve:	ax. 1000H: 45,0
	Shutoff electromagnet:
1st speed 1/min: 1000	Cutain
Oveflow : 55138 I quantity cm3/10s: (40153) I	Cut-in min. voltage : 10,0
2nd speed 1/min: 2200 I	Rated voltage : 12,0
Overflow : 55138 I	
quantity cm3/10s: (40153)	Mounting and assembly dimensions:
Delivery-quant. and breakaway char.:	Designation
1st speed 1/min: 2550	K mm : 3,23,4
но7	

KF mm : 5,7...5,9 MS mm : 1,4...1,6 SVS max. mm : 3,6 XK mm : 18,8...20,8 XL mm : 9,4...12,8

Note inst. in remarks column

Test sheet : OPE 2,3 M1 Edition : 12.12.86

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/9F2200 L243-2 Type number : 0 460 494 203 Type number

Customer-specific information

Customer : OPEL

: 2,3 LIT. Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.3

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening |

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2 mm: 840 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1200 Setting value mm: 4,3...4,7

Supply-pump pressure:

1/min: 1200 Speed Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

1/min : 1200 Speed

Del.quantity cm3/

1000H.: 43,0..44,0

cm3/: 3,0Dispersion

1000H.: -

		l 2nd speed 1/min: 2200
	Low-idle speed regulation:	! Overflow : 55138 ! quantity cm3/10s: (40153)
	Speed 1/min: 270	!
	Del.quantity cm3/	<pre>Delivery-quant. and breakaway char.:</pre>
	1000H.: 10,0	14,0 1st speed 1/min: 2700
1	Dispersion cm3/: 2,5	Del.quantity cm3/: - 1 1000H.: 03.0
	1000H.: (3,0)	1 1000H.: 03,0
	Full-load speed regulation:	I 3rd speed 1/min: 26UU
	-	Del.quantity cm3/: 4,012,0
	Speed 1/min: 2450	1000H.: (4,012,0)
	Del.quantity cm3/	1 4th speed 1/min: 2450
1	1000H: 21,0	27,0 Deliquantity cm3/: -
		27,0 Del.quantity cm3/: - 1000H: (20,028,0)
	Start:	
		Del.quantity cm3/: 34.837.8 1 1000H.: (34.038.6)
1	Speed 1/min: 100	1 1000H.: (34,038,6)
1	Del.quantity mind.	6th speed
1	cm3/1000H.: 52,0	Del.quantity cm3/: - 1 1000H.: (41,245,8)
1		1 1000H.: (41,2,,,45,8)
į	Load-dependent start of del	ivery: I 7th speed 1/min: 600
1		l Del.quantity cm3/: 33,536,5
į	Speed 1/min: 1200	1 1000H.: (32,038,0)
1		
1	Inspection-pump test specif	ications Zero delivery (stop):
1	Test specifications in pare	ntheses
1	Too open the party	Mech. shutoff:
1		I Speed 1/min: -
1	Timing-device characteristi	
		1 1000H.
1	1st speed 1/min: 600	,
	TD travel mm: 0,61	.4 Electr. shutoff:
1	mm: (0,3	
-	2nd speed 1/min: 800	I ELAB volt: -
ł	TD travel mm: 1,92	
1	mm: (1,6	
1	3rd speed 1/min: 1200	1
1	TD travel mm: -	Idle delivery:
1	mm: (3,8	
ļ	4th speed 1/min: 2200	1 1st speed 1/min: 270
	TD travel mm: 9,71	0.5 Del quantity cm3/: -
	mm: (9,4	
1	IIII. (7,4	
1	Supply-of the pressure observe	
Ì	Supply-pump pressure charac	i 1000H.: (2,010,0)
	1st speed 1/min: 600	3rd speed 1/min: 400
1		
1	Supply-pump	Del.quantity cm3/: - 1000H.: 02,5
1	pressure bar: 2,43	1 1000R.: 02,J
1	2nd speed 1/min: 800	1 Automotio otoption fuel deliverus
1	Supply-pump	Automatic starting fuel delivery:
1	pressure bar: 3,03	
Ì	3rd speed 1/min: 2200	1 1st speed 1/min: 130
	Supply-pump	l Del.quantity cm3/: -
	pressure bar: 6,57	1 ind. 1000H: 52,0
	Ovenflow mishtite of overfl	ow valve: 1 2nd speed 1/min: 230
	Overflow quantity at overfl	
	10% cood 4/ 400	Del.quantity cm3/: -
	1st speed 1/min: 600	! ax. 1000H: 35,0
	Oveflow : 4183	
ı	quantity cm3/10s: (269	8) I Shutoff electromagnet:
I	u10	
	Н10	

Cut-in min. voltage : 10.0 Rated voltage : 12.0 XK mm : 18.7...20.7 XL mm : 9,3...12.7

Note inst. in remarks column

Test sheet : FIA 1.7 P2 : 18.12.86 Edition

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/9F2300 R256 Type number : 0 460 494 204 Type number : 0 460 494 204

Customer-specific information : FIAT UNO Customer

: X8/34 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 022 assembly

Opening pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 mm: 450 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Setting value mm: 4,3...4,7

Supply-pump pressure:

1/min: 1500 Setting value bar: 5,3...5,9

Full-load del. w/out charge press.:

1/min : 1500 Speed Del.quantity cm3/

1000H.: 29,5...30,5 cm3/: 2,5 1000H.: (3,0) Dispersion

. restrett

Speed	lov-idle second population.	Del.quantity cm3/: 1,58,5
Speed	Low-idle speed regulation:	1000H.: (1,09,0) 4th speed 1/min: 2450
1000H.: 10,014,0 5th speed 1/min: 2300 1000H.: (3,0) 1000H.: (2,0)		Del.quantity cm3/: 19.025.0 1000H.: (18.026.0)
Speed	1000H.: 10,014,0	5th speed
Speed	Dispersion cm3/: 2,0 1 1000H.: (3,0)	Del.quantity cm3/: - 1000H.: (30,835,2)
Speed	Full-load speed regulation:	6th speed 1/min: 1500
Start: Del.quantity cm3/: 28,831,2 Del.quantity cm3/: 27,832,2 Start: 1000H: (27,832,2) Start: 1000H: (27,832,2) Start: Del.quantity cm3/: 30,033,0 Del.quantity cm3/: 30,036,0 Del.quantity cm		1000Ha: (27,8a.a.32,2)
Start:	Del.quantity cm3/ 1000H: 31,834,2	Del.quantity cm3/: 28,831,2
Speed	Start:	8th speed 1/min: 600
Del. quantity mind.	Speed 1/min: 100	Del.quantity cm3/: 30,033,0
Cm3/1000H.: 55,0 Zero delivery (stop):		100011. (20,2.2.34,2)
Speed	cm3/1000H.: 55,0	Zero delivery (stop):
Speed	Load-dependent start of delivery:	
Inspection-pump test specifications Test specifications in parentheses	Speed 1/min: 1500	Del.quantity cm3/: -
Timing-device characteristic: 1st speed 1/min: 800 TD travel mm: 1,22,0 2nd speed 1/min: 1500 TD travel mm: 500 TD travel mm: 1,22,0 2nd speed 1/min: 500 TD travel mm: 7,48,2 3rd speed 1/min: 2300 TD travel mm: 7,48,5) Supply-pump pressure characteristic: 1st speed 1/min: 600 Supply-pump pressure bar: 3,13,7 2nd speed 1/min: 2300 1st speed 1/min: 2300 1st speed 1/min: 2300 Supply-pump pressure bar: 7,17,7 2nd speed 1/min: 2300 1st speed 1/min: 2300 Supply-pump pressure bar: 7,17,7 Shutoff electromagnet: Delivery-quant. and breakaway char: 1st speed 1/min: 2600 Delivery-quant. and breakaway char: 1st speed 1/min: 2600 Delivery-quant. and breakaway char: 1st speed 1/min: 2650 TD travel mm: 1,7,95 TD travel mm: 1,7,95 TD travel mm: 1,7,95 TD travel mm: 1,7,95 TD travel mm: 2000 TD travel mm: 1,7,95 TD travel mm: 1,22,0 TD travel mm: 1,002,5 TD travel mm: 1,22,0 TD travel mm: 1,002,5 TD t	Inspection-pump test specifications	
Timing-device characteristic: 1st speed 1/min: 800 TD travel mm: 1,22,0 mm: (0,92,3) 2nd speed 1/min: 1500 TD travel mm: - 1000H.: (8,016,0) 2nd speed 1/min: 500 TD travel mm: - 1000H.: (07,0) 3rd speed 1/min: 500 TD travel mm: 7,48,2 mm: (7,18,5) Supply-pump pressure characteristic: 1st speed 1/min: 600 Supply-pump pressure bar: 3,13,7 2nd speed 1/min: 2300 Supply-pump pressure bar: 7,17,7 Overflow quantity at overflow valve: 1st speed 1/min: 2300 1st speed 1/min: 2300 Supply-pump pressure bar: 7,17,7 Overflow quantity at overflow valve: 1st speed 1/min: 2300 1st speed 1/min: 2300 Supply-pump pressure bar: 7,17,7 Overflow quantity at overflow valve: 1st speed 1/min: 2300 Oveflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char:: 1st speed 1/min: 2900 VK mm: 3,23,4 VK mm: 5,76,0 MS mm: 1,7.1.95 SVS max. mm: -	lest specifications in parentheses	Tate delivery:
1	Timino-davios characteristic:	
TD travel mm: 1,22,0 mm: (0,92,3)	Thirtig-device cital accertistic.	1000H.: (8,016,0)
Miniter March Ma		
3rd speed 1/min: 500		1000H (07 0)
TD travel mm: - mm: (3,85,2) 3rd speed 1/min: 2300 TD travel mm: 7,48,2 mm: (7,18,5) Supply-pump pressure characteristic: Del.quantity cm3/: - ind. 1000H: 48,0 1st speed 1/min: 600 Supply-pump pressure bar: 3,13,7 Del.quantity cm3/: - ind. 1000H: 48,0 1st speed 1/min: 2300 2nd speed 1/min: 400 Del.quantity cm3/: - ax. 1000H: 45,0 Supply-pump pressure bar: 7,17,7 Shutoff electromagnet: Overflow quantity at overflow valve: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Overflow : 55138 quantity cm3/10s: (40153) Mounting and assembly dimensions: Delivery-quant. and breakaway char.: Designation K mm : 3,23,4 Del.quantity cm3/: - KF mm : 5,76,0 MS mm : 1,795 SVS max. mm : -	2nd speed 1/min: 1500	3rd speed 1/min: 500
3rd speed 1/min: 2300	TD travel mm: -	Del.quantity cm3/: -
TD travel mm: 7,48,2 mm: (7,18,5) Supply-pump pressure characteristic:		1000H.: 02,5
Supply-pump pressure characteristic: 1st speed	TD travel mm: 7,48,2	Automatic starting fuel delivery:
1st speed 1/min: 600 Supply-pump pressure bar: 3,13,7 2nd speed 1/min: 2300 Supply-pump pressure bar: 7,17,7 Overflow quantity at overflow valve: 1st speed 1/min: 2300 Oveflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2900 Del.quantity cm3/: - 1000H: 01,5 Srd speed 1/min: 2650 Ind. 1000H: 48,0 2nd speed 1/min: 400 Del.quantity cm3/: - 1000H: 45,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Rated voltage : 12,0 For indication in the speed in		1st speed %/min: 300
1st speed 1/min: 600 Supply-pump pressure bar: 3,13,7 2nd speed 1/min: 2300 Supply-pump pressure bar: 7,17,7 Overflow quantity at overflow valve: 1st speed 1/min: 2300 Oveflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2900 Del. quantity cm3/: - 1000H.: 01,5 3rd speed 1/min: 2650 Del speed 1/min: 2650 Indicate the speed 1/min: 400 Del. quantity cm3/: - 2nd speed 1/min: 400 Del. quantity cm3/: - 1000H.: 01,5 Sys max. mm : - 2nd speed 1/min: 400 Del. quantity cm3/: - 1000H.: 01,5 Sys max. mm : -	Supply-pump pressure characteristic:	Del.quantity cm3/: -
Supply-pump pressure bar: 3.13,7 Del.quantity cm3/: - ax. 1000H: 45,0 Supply-pump pressure bar: 7,17,7 Shutoff electromagnet: Overflow quantity at overflow valve: Cut-in min. voltage : 10,0 Ist speed 1/min: 2300 Rated voltage : 12,0 Oveflow : 55138 quantity cm3/10s: (40153) Mounting and assembly dimensions: Delivery-quant. and breakaway char.: Designation K mm : 3,23,4 Del.quantity cm3/: - K mm : 5,76,0 Indicate the pressure of the pressure o	1st speed 1/min: 600	1114.
2nd speed 1/min: 2300 Supply-pump pressure bar: 7,17,7 Overflow quantity at overflow valve: 1st speed 1/min: 2300 Oveflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2900 Del. quantity cm3/: - 1000H: 2500 MS mm : 3,23,4 MS mm : 1,71,95 3rd speed 1/min: 2650 Ax. 1000H: 45,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Mounting and assembly dimensions: Designation K mm : 3,23,4 MS mm : 1,71,95 SVS max. mm : -	Supply-pump	
Supply-pump pressure bar: 7,17,7 Shutoff electromagnet: Overflow quantity at overflow valve: Cut-in min. voltage : 10,0 Rated voltage : 12,0 Overflow : 55138 Mounting and assembly dimensions: Delivery-quant. and breakaway char.: Designation K mm : 3,23,4 Ist speed 1/min: 2900 K mm : 3,23,4 Delivery-quantity cm3/: - KF mm : 5,76,0 Overflow quantity cm3/: - KF mm : 5,76,0 Ist speed 1/min: 2900 K mm : 1,71,95 Overflow quantity cm3/: - KF mm : 5,76,0 Overflow	pressure bar: 3,15,/	Delaquantity cm3/: -
pressure bar: 7,17,7 Shutoff electromagnet: Overflow quantity at overflow valve: Cut-in min. voltage : 10,0 1st speed 1/min: 2300 Rated voltage : 12,0 Overflow : 55138 Mounting and assembly dimensions: Delivery-quant. and breakaway char.: Designation K mm : 3,23,4 1st speed 1/min: 2900 K mm : 3,23,4 Del. quantity cm3/: - KF mm : 5,76,0 1000H.: 01,5 MS mm : 1,71,95 3rd speed 1/min: 2650 SVS max. mm : -	#	dx. 100011. 45,0
min. voltage : 10,0 Rated voltage : 12,0 Oveflow : 55138 quantity cm3/10s: (40153) Mounting and assembly dimensions: Delivery-quant. and breakaway char.: Designation 1st speed 1/min: 2900 K mm : 3,23,4 Delivery-quantity cm3/: - KF mm : 5,76,0 1000H.: 01,5 MS mm : 1,71,95 3rd speed 1/min: 2650 SVS max. mm : -	pressure bar: 7,17,7	Shutoff electromagnet:
1st speed 1/min: 2300 Oveflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2900 Del.quantity cm3/: -	Overflow quantity at overflow valve:	
Oveflow : 55138 quantity cm3/10s: (40153) Delivery-quant. and breakaway char.: 1st speed 1/min: 2900 Del.quantity cm3/: - 1000H.: 01,5 3rd speed 1/min: 2650 SVS max. Mounting and assembly dimensions: MF mm : 3,23,4 MF mm : 5,76,0 SVS max. mm : -	1st speed 1/min: 2300	
Delivery-quant. and breakaway char.: 1st speed	Oveflow : 55138	
1st speed 1/min: 2900 K mm : 3,23,4 Del.quantity cm3/: - KF mm : 5,76,0 1000H.: 01,5 MS mm : 1,71,95 3rd speed 1/min: 2650 SVS max. mm : -	quantity cm3/10s: (40153)	Mounting and assembly dimensions:
Del.quantity cm3/: - KF mm : 5,76.0 1000H.: 01.5 MS mm : 1,71.95 3rd speed 1/min: 2650 SVS max. mm : -		Designation
1000H.: 01,5 MS mm : 1,71,95 3rd speed 1/min: 2650 SVS max. mm : -		K mm : 5,25,4
3rd speed 1/min: 2650 SVS max. mm : -	1000H.: 01.5	MS mm : 1.71.95
H13		
	H13	

XK XL

mm mm

: 17,0...19,0 : 9,8...13,2

Note inst. in remarks column

Test sheet : VWW 1,6 W19 Edition : 02.04.87

replaces

Calibrating oil : ISO 4113

Injection pump : VE 4/9F2400 R221-2 Type number : 0 460 494 207

Customer-specific information

Customer

: 086-1,6L Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp.

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

: 1 688 901 000 assembly

Opening

pressure bar : 147...150

Test inj. tubing : 1 680 750 017

Outside diameter : 6 x Wall thickness : 2

mm : 840 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1250 Setting value mm: 2,1...2,5

Supply-pump pressure:

Speed 1/min: 1250 Setting value bar: 4,0...4,6

Full-load del. w/out charge press.:

1/min : 1000 Speed

Del.quantity cm3/ 1000H.: 28,5...29,5

Low-idle speed regulation:

Speed
Del.quantity cm3/
1000H.: 12,0...14,0 1/min: 375 Delivery-quant. and breakaway char.: 1st speed 1/min: 2800 Del.quantity cm3/: -1000H.: 0...4,0 Residual-Delivery Setting Speed 3rd speed 1/min: 550 1/min: 2600 Del.quantity cm3/: -1000H.: (10,0...18,0) 4th speed 1/min: 2500 Del.quantity cm3/ 1000H.: 2,5...3,5 Full-load speed regulation: Del.quantity cm3/: 19.0..29.0 1000H.: (18.0...30.0) Speed 1/min: 2600 1/min: 2400 Del.quantity cm3/ 5th speed Del.quantity cm3/: 27,5...29,5 1000H.: (26,3...30,7) 6th speed 1/min: 1000 1000H: 11,0...17,0 Start: Del.quantity cm3/: -1000H: (26,8...31,2) 1/min: 100 Speed Del.quantity mind. 1/min: 600 7th speed Del.quantity cm3/: 22,5...25,5 1000H.: (21,0...27,0) cm3/1000H.: 35,0 Load-dependent start of delivery: Zero delivery (stop): Speed 1/min: 1250 Mech. shutoff: 1/min: -Inspection-pump test specifications Speed Del.quantity cm3/: - 1000H. Test specifications in parentheses Timing-device characteristic: Electr. shutoff: 1/min: 425 Speed ELAB 1/min: 1000 volt: -1st speed mm: 1.0...1.8 mm: (0.7...2.1) Del.quantity cm3/: - 1000H. TD travel 1/min: 1250 2nd speed TD travel Idle delivery: mm: mm: (1,6...3,0)1/min: 1800 3rd speed 1st speed 1/min: 375 Del.quantity cm3/: -1000H.: (9,0...17,0) 2nd speed 1/min: 425 mm: 4,2...5,0 mm: (3,0...5,3) TD travel 1/min: 2400 4th speed mm: 6,1...6,9 mm: (5,8...7,2) Del.quantity cm3/: 5,5...8,5 1000H.: (3,0...11,0) TD travel High Idle: Speed 1/min: 525
Del.quantity cm3/: 7,0...9,0
1000H.: (4,0...12,0) Supply-pump pressure characteristic: 1/min: 600 1st speed Supply-pump bar: 1,9...2,9 pressure Residual: 1/min: 2400 1/min: 500 2nd speed Speed Del.quantity 5,4,..5 : Supply-pump 1000H.: (1,0...6,0) bar: 7,1...8,1 pressure Overflow quantity at overflow valve: Automatic starting fuel delivery: 1st speed 1/min: 600 1st speed 1/min: 180 Oveflow : 55...70 Del.quantity cm3/: cm3/10s: (50...75) 1/min: 2400 1000H: 35,0 quantity ind. 2nd speed Over flow verflow : 82...112 quantity cm3/10s: (77...117) 2nd speed 1/min: 380 **H16**

Del.quantity cm3/: -ax. 1000H: 30,0 Shutoff electromagnet: Cut-in min. voltage : 10,0 Rated voltage : 12,0

Mounting and assembly dimensions:

Designation

mm : 3,2...3,4 mm : 5,7...6,0 mm : 1,3..1,55 mm : 3,1 K KF MS

SVS max.

Setting of residual delivery.

BOSCH-INJ.-PUMP TEST SPECIFICATIONS Low-idle speed regulation: Note inst. in remarks column 1/min: 375 Speed Del.quantity cm3/ 1000H.: 8,0...10,0 : PEU 1,9 G Test sheet Edition : 16.12.86 cm3/: 2,0 Dispersion replaces 1000H.: (3,0) : ISO 4113 Calibrating oil Residual-Delivery Setting Speed 1/min: 550 : VE 4/9F2300 R272 Injection pump Del.quantity cm3/ : 0 460 494 211 1000H.: 2,5...3,5 Type number Full-load speed regulation: Customer-specific information Customer : PEUGEOT 1/min: 2500 Speed Del quantity cm3/ : XUD 9A 1000H: 19,0...25,0 Engine TEST BENCH REQUIREMENTS Start: Calibrating-oil Speed 1/min: 100 Del.quantity mind. return temp. cm3/1000H.: 45,0 with thermometer : 40...48 : 42...50 electronically Load-dependent start of delivery: Inlet press., bar: 0.3 Speed 1/min: 1250 Calibrating nozzle-holder : 1 688 901 022 assembly Inspection-pump test specifications Test specifications in parentheses Opening pressure bar : 130...133 Timing-device characteristic: Test inj. tubing : 1 680 750 073 1/min: 800 1st speed TD travel mm: 0,6...1,4Outside diameter : 6 2nd speed 1/min: 1250 x Wall thickness : 2 TD travel mm: mm: (2,5...3,9) 1/min: 2000 x Length mm : 450 3rd speed mm: 6,7...7,5 TD travel Injection-pump setting values Test specifications in parentheses mm: (6,4...7,8)Supply-pump pressure characteristic: Timing-device travel: 1/min: 1250 1/min: 800 1st speed Setting value mm: 3,0...3,4 Supply-pump bar: 2,6...3,2 pressure Supply-pump pressure: -1/min: 2000 2nd speed Supply-pump bar: 5,9...6,5 1/min: 1250 Speed pressure Setting value bar: 3,9...4,5 Overflow quantity at overflow valve: Full-load del. w/out charge press.: 1st speed 1/min: 800 Oveflow 1/min : 1250 : 41...83 Speed cm3/10s: (26:..98) 1/min: 2300 Del.quantity cm3/ quantity 1000H.: 29.5...30,5 cm3/: 2,5 2nd speed : 55...138 Over flow Dispersion 1000H.: (3,0) quantity cm3/10s: (40...153)

H18

```
Delivery-quant. and breakaway char.:
1st speed
               1/min: 2650
Del.quantity cm3/: -
1000H.: 0...10,0
3rd speed
               1/min: 2500
Del.quantity cm3/: -
1000H.: (18,0...26,0)
4th speed 1/min: 2250
Del.quantity cm3/: 31,5...34,5
              1000H.: (30,8...35,2)
               1/min: 1250
5th speed
Del.quantity cm3/:
1000H.: (27,8...32,2)
6th speed 1/min: 800
Del.quantity cm3/: 30,5...33,5
              1000H.: (29,0...35,0)
               1/min: 500
7th speed
Del.quantity cm3/: 30,5...33,5
1000H.: (29,0...35,0)
Zero delivery (stop):
Mech. shutoff:
              1/min: 2300
Speed
Del.quantity cm3/: -
              1000H.
Idle delivery:
               1/min: 375
1st speed
Del.quantity cm3/: -
              1000H.: (5,0...13,0)
High Idle:
               1/min: 470
Speed
Del.quantity cm3/: 8.0...10.0
1000H.: (5,0...13,0)
Residual:
               1/min: 550
Speed
Del quantity
              1000H.: 0...7,0
Automatic starting fuel delivery:
               1/min: 200
1st speed
Del.quantity cm3/: -
               1000H: 40,0
 ind.
               1/min: 300
2nd speed
Del.quantity cm3/:
               1000H: 35,0
 ax.
Shutoff electromagnet:
Cut-in
min. voltage
                     : 10,0
                     : 12,0
Rated voltage
```

Mounting and assembly dimensions:

H19

Designation K mm : 3,2...3,4 KF mm : 5,4...5,7 MS mm : 1,3..1,55 SVS max.

Note inst. in remarks column

Test sheet : FIA 1.9 E1 Edition : 16.12.86

replaces

Calibrating oil : ISO 4113

Injection pump Type number : VE 4/9F2300 R141-1

: 0 460 494 212

Customer-specific information

: FIAT Customer

: x8/43 Engine

TEST BENCH REQUIREMENTS

Calibrating-oil return temp. °C

with thermometer : 40...48 electronically : 42...50

Inlet press., bar: 0.2

Calibrating nozzle-holder

assembly : 1 688 901 022

Opening

pressure bar : 130...133

Test inj. tubing : 1 680 750 073

Outside diameter : 6 x Wall thickness : 2 x Length

Injection-pump setting values Test specifications in parentheses

Timing-device travel:

1/min: 1500 Setting value mm: 4,3...4,7

Supply-pump pressure:

1/min: 1500 Setting value bar: 5,6...6,2

Full-load del. w/out charge press.:

1/min : 1500 Speed

Del.quantity cm3/

1000H.: 29,2...30,2 cm3/: 2,5 1000H.: (3,0) Dispersion

1	Del.quantity cm3/: -
Low-idle speed regulation:	1000H.: -
Speed 1/min: 390	2nd speed 1/min: 2600 Del.quantity cm3/: 3,010,0
Del.quantity cm3/	1000H.: (2,510,5)
1000H.: 9,013,0	3rd speed 1/min: 2500
Dispersion cm3/: 2,5	Del.quantity cm3/: -
1000H.: (3,0) Full-load speed regulation:	1000H.: (10,018,0) 4th speed 1/min: 2400
	Del.quantity cm3/: 21,027,0
Speed 1/min: 2500	1000H.: (20,028,0)
Del.quantity cm3/ 1000H: 11,017,0	5th speed
1	1000H.: (30, 034,4)
Start:	6th speed 1/min: 1500
Speed 1/min: 100	Del.quantity cm3/: - 1000H.: (26,531,9)
Del.quantity mind.	7th speed 1/min: 1000
cm3/1000H.: 55,0	Del.quantity cm3/: 28,931,5
Londadonon dont stant of delivery	1000H.: (28,032,4)
Load-dependent start of delivery:	8th speed 1/min: 600 Del.quantity cm3/: 30,033,0
Speed 1/min: 1500	1000H: (28,534,5)
Inconstignation test considirations	Zana daliyany (atas).
Inspection-pump test specifications Test specifications in parentheses	Zero delivery (stop):
The specific in particular services	Mech. shutoff:
Timing device characteristics	Speed 1/min: 2300
Timing-device characteristic:	Del.quantity cm3/: - 1000H.
1st speed 1/min: 800	
TD travel mm: 1,72,5	Idle delivery:
mm: (1,42,8) 2nd speed	1st speed 1/min: 390
TD travel mm: -	Del.quantity cm3/: -
mm: (3,85,2)	1000H.: (7,015,0)
3rd speed 1/min: 2300 TD travel	2nd speed 1/min: 440 Del.quantity cm3/: 1,07,0
mm: (6,88,2)	1000H.: (08,0)
Pure luceum energime characteristics	3rd speed 1/min: 500
Supply-pump pressure characteristic:	Del.quantity cm3/: - 1000H.: 02,5
1st speed 1/min: 400	
Supply-pump	Automatic starting fuel delivery:
pressure bar: 2,83,4	1st speed 1/min: 300
Supply-pump	Del.quantity cm3/: -
pressure bar: 7,48,0	ind. 1000H: 45,0
Overflow quantity at overflow valve:	2nd speed 1/min: 400
	Del.quantity cm3/: -
1st speed	ax. 1000H: 46,0
quantity cm3/10s: (2698)	Shutoff electromagnet:
2nd speed 1/min: 2300	•
Overflow : 55138 quantity cm3/10s: (40153)	Cut-in min. voltage : 10,0
qualities castios. (40133)	min. voltage : 10,0 Rated voltage : 12,0
Delivery-quant. and breakaway char.:	•
1st speed 1/min: -	Mounting and assembly dimensions:
H21	
	

Designation K KF MS SVS max. XK XL : 3,1...3,4 : 5,7...6,0 : 1,7...1,9 : 2,8 : 20,2...22,2 : 10,3...13,7 mm mm mm mm

mm mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : VOL 10,0 Q2 : 12.06.87 : 23.9.86 Calibrating oil : ISO-4113

: 0 401 846 758 Combination no.

Injection pump

Pump designation : PE6P110A32ORS3108Z

EP type number : 0 411 816 728

Governor

Governor design. : RQV250...1100PA649

Governer no. : 0 421 813 346

Customer-spec. information Customer : VOLVO

Engine : THD100EB

1st version kW : 160.0 1/min: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Calibrating nozzle-holder

assembly : 0 681 343 009

opening 0

pressure, bar : 172...175

Test inj. tubing : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values ____

START OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.1[©] : (2.95...3.15) Prestroke mm Contr.-rod trav.mm: 9.00...12.00

Cam sequence : 1-5-3-6-2-4 HIGHEST RATED SPEED 1st version Control-lever SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) position degrees: 61...69 Testing: 1st c-rod trav.mm: 9.50 SD mark cyl. no. : 1 Speed 1/min: 1160...1170 BASIC SETTING 2nd c-rod trav.mm : 4.00 Speed 1/min: 1225...1255 th speed 1/min: 1350 C-rod trav.mm: 0.00...1.00 1st speed 1/mi: 700 4th speed Contr.-rod trav.mm: 10.50...10.60 LOWEST RATED SPEED I Del.quantity cm3/ : 12.2...12.4 Control-lever position degrees: 7...15 100H.: (11.9...12.7) Testing: Dispersion cm3/:0.41/min : 100 Speed C-rod trav.mm min : 6.80 Speed 1/min: 250 G-rod trav.mm: 5.30...5.50 G-rod trav.mm: 2.00 100H.: (0.7) 2nd speed 1/min: 250.0 Contr.-rod trav. m: 5.3...5.5

Del.quantity cm3/: 3.0...3.4

100H.: (2.7...3.6)

Dispersion cm3/: 0.3

100H.: (0.6) 1/min : 350...410 Speed compensator (LDA,ADA,ALDA) 1st version Setting (B) Setting of injection pump with 1/min : 500 hPa : 750 externally-mounted governor Speed Pressure SLEEVE TRAVELS Contr.-rod trav.mm: 10.50...10.60 1st speed 1/min: 250 Sleeve travel mm: 1.10...1.30
2nd speed 1/min: 500
Sleeve travel mm: 4.10...4.90
3rd speed 1/min: 700 Measurement 1/min : 500 Speed 1st pressure hPa : -Sleeve travel mm: 6.30...6.70 C-rod trav.mm : 9.60...9.80 4th speed 1/min: 950 2nd pressure hPa : 265 Sleeve travel mm: 6.30...6.70 C-rod trav.mm : 9.90...10.00 3rd pressure hPa : 310 5th speed 1/min: 1100 Sleeve travel mm: 7.00...7.50 C-rod trav.mm : 10.20...10.40 SLEEVE POSITION FUEL-DELIVERY CHARACTERISTICS Charge press. hPa : -Speed 1/min : 700 Control-lever position Degree: -1 1/min: 1175 Del.quantity cm3/: 105.5...108.5 Speed 1000H.: (103.0...111.0) Cont.-rod travelmm: 15.20...17.80 FULL-LOAD DELIV. AT FULL-LOAD STOP STARTING FUEL DELIVERY 1st version Speed 1/min: 700 Charge press. hPa: 750 Del.quantity cm3/: 122.0...124.0 1000H.: (119.0...127.0) Dispersion cm3/: 4.00 Speed 1/min: 100 Del.quantity cm3/: 160.0...190.0 Contr.-rod trav.mm: 20.00...21.00 1000H.: (7.50) LOW IDLE H24

Speed 1/min: 250 Contr.-rod trav.mm: 5.30...5.50 Del.quantity cm3/: 30.0...34.0 1000H.: (27.5...36.5) Dispersion cm3/: 3.00 1000H.: (6.00)

Remarks:

SETTING OF FBG
-Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 48.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 335 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing $^{\circ}$ CS: 0-90-180-270 Tolerance + - $^{\circ}$: 0.00 (1.00) Test sheet : MB 2.0 P7 : 14.11.86 Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING. Combination no. : 0 400 074 918 1st speed 1/mi: 1000 Injection pump Pump designation : PES4M55C32ORS152-3 Contr.-rod trav.mm: 11.10...11.20 EP type number : 0 4(3) 054 967 Del.quantity cm3/: 3.1...3.2 Governor Governor design. : RSF360/2300M59-16 100H.: (3.0...3.3) Governer no. : 0 420 021 076 Customer-spec. information Dispersion cm3/:0.2Customer : DB 100H.: (0.3) : 0M601 (2.0 L) Engine 2nd speed 1/min: 335.0 Contr.-rod trav₂ m: 5.4...5.6 1st version kW : 53.0 Del.quantity cm3/: 0.5...0.6 TEST BENCH REQUIREMENTS 300Ha: (0.4...0.9) ℃m3/: 0.1 100H.: (0.1) Diepersion Calibrating-oil inlet temp. ^DC : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version 1/min? 1000 Speed Del.quantity cm3/: 31.0...32.0 Inlet press., bar : 1.00 1000H.: (30.0...33.0) cm3/ : 2.50Calibrating nozzle-holder Dispersion : 0 681 343 009 1000H.: (3.00) assembly HIGHEST RATED SPEED Opening pressure, bar : 172...175 1st version Control-lever position degrees: 50...0
3rd c-rod trav.mm: 7,80...8,20 Test inj. tubing : 1 680 750 014 Speed 1/min : 0...2500 4th speed 1/min : 2950 Outside diameter C-rod trav.mm : 0.00...1.00 x Wall thickness : 6.00x2.00x609 x Length mm SET IDLE CONTROL-LEVER **POSITION** (A) Injection pump setting values Insp. values in parentheses 1/min: 1000 Speed Set constant delivery quant. Contr.-rod trav.mm: 0,90...1,00 per values ____ LOWEST RATED SPEED I START OF DELIVERY Control-lever position degrees: 13...17 Test pressure, bar: 30...32 Setting point w/out aux. spring Prestroke mm : 2.00...2.10 1/min : 335 : (1.95...2.15) Contr.-rod trav.mm: 5.5 Contr.-rod trav.mm: 20.00...22.00 Cam sequence : 1- 3- 4- 2 Testing:

H27

Speed 1/min : 225 C-rod trav.mm min : 9.50 Speed 1/min : 335 : 5.40...5.60 C-rod trav.mm : 1.50 C-rod trav.mm 1/min : 590...690 1/min : 1000 Speed Speed C-rod trav.mm max : 1.00 SET IDLE AUXILIARY SPRING Speed 1/min : 400 Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1000 C-rod trav.mm : 11.10...11.20 2nd speed 1/min : 1800 C-rod trav.mm : 10.80...11.00 3rd speed 1/min : 2200 C-rod trav.mm : 10.30...10.50 FUEL-DELIVERY CHARACTERISTICS Speed 1/mon : 1800 Del.quantity cm3/: 34.0...35.5 1000H.: (33.0...36.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 33.0...35.0 1000H.: (32.0...36.0) cm3/: 2.50 Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/ : 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 227n : 2500 Contr.-rod 228v.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) cm3/: 2.50Dispersion 1000H.: (3.00) LOW IDLE Speed 1/min: 335 Contr.-rod trav_mm: 5.40...5.60 Del.quantity cm3/: 5.0...6.0 1000H,: (4.5...9.0) cm3/: 1.00 Dispersion 1000H.: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop 1/min : 335 Contr.-rod trav.mm: (12,00...13,40) Del.quantity cm3/: (31,00...38,00) 1000H.: -

Electric current A: 1,8 Control lever at full-load stop 1/min : 2950 Speed

Contr.-rod trav.mm: 0,00...1,00

Electric current

short-duration A: 3,00 Starting test

Speed 1/min : 100

Del.quantity cm3/: -min. 1000H.: 55,00

Remarks:

SETTING OF FBG -Setting and locking of F&G according to start-of-delivery average of all cylinders 19.3...19.70 (19.2...19.80). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowab: after switchover point (of starting cam) up to 1000 1/min.
-Control-lever position 48.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 335 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.00 (1.00) Test sheet : MB 2,0 P8 : 07.11.86 Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING : 0 400 074 919 Combination no. 1st speed 1/mi: 1000 Injection pump Contr.-rod trav.mm: 11.10...11.20 Pump designation : PES4M55C32ORS152-3 EP type number : 0 410 054 967 Del.quantity cm3/: 3.1...3.2 Governor Governor design. : RSF375/2300M55-15 100H.: (3.0...3.3) Governer no. : 0 420 021 069 cm3/:0.2Customer-spec. information Dispersion Customer : DB 100H.: (0.3) : 0M601 (2.0 L) Engine 2nd speed 1/min: 375.0 Contr.-rod trav. m: 5.4...5.6 Del.quantity cm3/: 0.5...0.6 1st version kW : 53.0 TEST BENCH REQUIREMENTS 100H.: (0.4...0.9) cm3/:0.1Dispersion Calibrating-oil inlet temp. °C 100H.: (0.1) : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version 1/min: 1000 Speed Del.quantity cm3/: 31.0...32.0 Inlet press., bar : 1.00 1000H: (30.0...33.0) cm3/: 2.50 1000H: (3.00) Calibrating nozzle-holder Dispersion : 0 681 343 009 assembly HIGHEST RATED SPEED Opening pressure, bar : 172...175 1st version Control-lever position degrees: 50...0

3rd c-rod trav.mm: 7,80...8,20 Test inj. tubing : 1 680 750 014 Speed 1/min: 0...2500 th speed 1/min: 2950 C-rod trav.mm: 0.00...1.00 Outside diameter 4th speed x Wall thickness : 6.00x2.00x600 x Length mm SET IDLE CONTROL-LEVER POSITION (A) Injection pump setting values Insp. values in parentheses 1/min : 1000 Speed Set constant delivery quant. Contr.-rod trav.mm: 0,90...1,00 per values ____ LOWEST RATED SPEED I Control-lever START OF DELIVERY position degrees: 13...17 Test pressure, bar: 30...32 Setting point w/out aux. spring 1/min : 375 Prestroke mm : 2.00...2.10 Contr.-rod trav.mm: 5.5 : (1.95...2.15) Contr.-rod trav.mm: 20.00...22 30 Cam sequence : 1- 3- 4-Testing:

1/min : 250 Speed C-rod trav.mm min : 11.50 Speed 1/min : 375 C-rod trav.mm : 5.40...5.60 : 1.50 C-rod trav.mm 1/min : 630...730 Speed 1/min : 1000 Speed C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING 1/min : 400 Speed Contr.-rod trav.mm: 4,40...4,60 : (4,30...4,70) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 11.10...11.20 2nd speed 1/min : 1800 C-rod trav.mm : 10.80...11.00 3rd speed 1/min : 2200 C-rod trav.mm : 10.30...10.50 FUEL-DELIVERY CHARACTERISTICS Speed 1/min : 1800 Del.quantity cm3/: 34.0...35.5 1000H: (33.0...36.5) Dispersion cm3/: 2.50 1000H: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 33.0...35.0 1000H.: (32.0...36.0) cm3/: 2.50 Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) cm3/: 2.50Dispersion 1000H.: (3.00) LOW IDLE Speed 1/min: 375 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.0...6.0 1000H.: (4.5...9.0) cm3/: 1.00 Dispersion 1000H.: (1.50)

J02

SETTING PNUEUMATIC FAST IDLE

Speed 1/min : 425 Contr.=rod trav.mm: (7,00...8,60)

Del.quantity cm3/: (13,00...21,00) 1000H.: -

hPa : 0,40 Vacuum

Remarks:

SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°).

Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing GS: 0-90-180-270 Tolerance + - : 0.00 (1.00) : MB 2,0 P9 Test sheet : 05.11.86 Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING Combination no. : 0 400 074 920 1/mi: 1000 1st speed Injection pump Pump designation : PES4M55C32ORS152-3 Contr.-rod trav.mm: 11.10...11.20 EP type number : 0 410 054 967 Del.quantity cm3/: 3.1...3.2 Governor Governor design. : RSF375/2300M55-14 100H.: (3.0...3.3) Governer no. : 0 420 021 068 cm3/:0.2Customer-spec. information Dispersion : DB Customer 100H.: (0.3) : 0M601 (2.0 L) Engine 2nd speed 1/min: 375.0 Contr.-rod trav. m: 5.4...5.6 Del.quantity cm3/: 0.5...0.6 1st version kW : 53.0 100H.: (0.4...0.9) TEST BENCH REQUIREMENTS cm3/: 0.1Dispersion Calibrating-oil inlet temp. °C 100H.: (0.1) : 38 . . . 42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version 1/min: 1000 Speed Inlet press., bar: 1.00 Del.quantity cm3/: 31.0...30.9 1000H.: (30.0...35.0) cm3/ : 2.50 1000H.: (3.00) Calibrating nozzle-holder Dispersion : 0 681 343 009 assembly HIGHEST RATED SPEED Opening pressure, bar : 172...175 1st version Control-lever position degrees: 50...0
3rd c-rod trav.mm: 7,80...8,20 Test inj. tubing : 1 680 750 014 1/min : 0...2500 1/min : 2950 Speed Outside diameter 4th speed C-rod trav.mm : 0.00...1.00 x Wall thickness : 6.00x2.00x600 x Length mm SET IDLE CONTROL-LEVER POSITION (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. 1/min : 1000 Speed Contr.-rod trav.mm: 0,90...1,00 per values ____ LOWEST RATED SPEED I Control-lever START OF DELIVERY Test pressure, bar: 30...32 position degrees: 13...17 Setting point w/out aux. spring 1/min : 375 : 2.00...2.10 Prestroke mm : (1.95...2.15) Contr.-rod trav.mm: 5.5 Contr.-rod trav.mm: 20.00...22.00 Cam sequence : 1- 3- 4- 2 Testing:

Speed 1/min : 250 C-rod trav.mm min : 11.50 Speed 1/min : 375 : 5.40...5.60 C-rod trav.mm : 1.50 C-rod travamm 1/min : 630...730 Speed 1/min : 1000 Speed C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING Speed 1/min : 400 Contr.-rod trav.mm: 4,40...4,60 : (4,30...4,70) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1000 C-rod trav.mm : 11.10...11.20 2nd speed 1/min : 1800 C-rod trav.mm : 10.80...11.00 3rd speed 1/min : 2200 C-rod trav.mm : 10.30...10.50 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 34.0...35.5 1000H.: (33.0...36.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 33.0...35.0 1000H.: (32.0...36.0) cm3/: 2.50 Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/ : 55.0...0.0 1000H.: (55.0...0.0)
Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) cm3/: 2.50 Dispersion 1000H.: (3.00) FOM IDLE Speed 1/min: 375 Contr.-rod trav_mm: 5.40...5.60 Del.quantity cm3/: 5.0...6.0 1000H.: (4.5...9.0) cm3/: 1.00 Dispersion 1000H.: (1.50)

J04

SETTING PNUEUMATIC FAST IDLE (ELA)

Speed 1/min: 425 Contr.-rod trav.mm: (7,00...8,60) Del.quantity cm3/: (13,00...21,00)

1000H.: -

Vacuum hPa : 0,40

Remarks: SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-90-180-270 Tolerance + - 0.00 (1.00) Test sheet : MB 2,4 V1 : 09.03.87 Edition Superceeded BASIC SETTING Calibrating oil : ISO-4113 1/mi: 1000 1st speed Combination no. : 0 400 074 921 Contr.-rod trav.mm: 13.00...13.10 Injection pump Pump designation : PES4M55C32ORS107-2 EP type number : 0 410 054 962 Del.quantity cm3/: 3.7...3.8 100H.: (3.6...3.9) Governor Governor design. : RSF375/2250M17 Governer no. : 0 420 021 016 Dispersion cm3/:0.2Customer-spec. information 100H.: (0.3) Customer : DB 1/min: 375.0 2nd speed Contr.-rod trav. m: 6.1...6.3 Del.quantity cm3/: 0.6...0.7 100H.: (0.5...0.9) : 0M616 (2.4 L) Engine 1st version kW : 53.0 cm3/:0.1Dispersion TEST BENCH REQUIREMENTS 100H.: (0.1) Calibrating-oil inlet temp. OC FULL-LOAD DELIV. AT FULL-LOAD STOP : 38...42 1st version Speed 1/min: 1000 Del.quantity cm3/: 37.5...38.5 Overflow valve : 1 417 413 012 1000H.: (36.5...39.5) Dispersion cm3/ : 2.50 Inlet press., bar: 1.00 1000H.: (3.00) Calibrating nozzle-holder : 0 681 343 009 HIGHEST RATED SPEED assembly 1st version Control-lever Opening position degrees: 50...0

3rd c-rod trav.mm: 7,80...8,20 pressure, bar : 172...175 1/min : 0...2500 Speed 4th speed 1/min: 2950 Test inj. tubing : 1 680 750 014 C-rod trav.mm : 0.00...1.00 Outside diameter x Wall thickness SET IDLE CONTROL-LEVER : 6.00x2.00x600 POSITION x Length mm 1/min : 1000 Speed Contr.-rod trav.mm: 1,40...1,50 (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. LOWEST RATED SPEED I per values ____ Control-lever position degrees: 9...13 Setting point w/out aux. spring Speed 1/min: 375 START OF DELIVERY Test pressure, bar: 30...32 Contr.-rod trav.mm: 6.2 Prestroke mm : 2.20...2.30 : (2.15...2.35) Testing: Contr.-rod trav.mm: 20.00...0.00 1/min : 250 Speed Cam sequence : 1- 3- 4- 2 C-rod trav.mm min : 10.50

1/min : 375 Speed C-rod trav.mm : 6.10...6.30 : 2.00 C-rod trav.mm Speed 1/min : 720...820 1/min: 1000 Speed C-rod trav.mm max: 1.50 SET IDLE AUXILIARY SPRING 1/min : 450 Speed Contr.-rod trav.mm: 4,90...5,10 : (4,80...5,20) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 13.00...13.10 1/min : 1800 2nd speed C-rod trav.mm : 12.00...12.20 3rd speed 1/min : 2200 C-rod tray.mm : 11.70...11.90 FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 1800 Del.quantity cm3/: 37.5...39.5 1000H:: (36.5...40.5) cm3/ : 2.50 Dispersion 1000H.: (3.00) 1/min: 2200 Speed Del.quantity cm3/: 37.5...39.5 1000H: (36.5...40.5) Dispersion cm3/: 2.50 1000H:: 3.00 STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 53.0...0.0 1000H.: (53.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min : 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 20.0...24.0 1000H.: (19.0...25.0) Dispersion cm3/: 2.50 1000H.: (3.00) LOW IDLE Speed 1/min : 375 Contr.-rod trav.mm: 6.10...6.30 Del.quantity cm3/: 6.0...7.0 1000H:: (5.5...9.0) Dispersion cm3/: 1.00 1000H.: (1.50)

Remarks:

J06

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed

range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.00 (1.00) Test sheet : MB 2,4 V2 : 09.03.87 Edition Superceeded BASIC SETTING Calibrating oil : ISO-4113 1/mi: 1000 1st speed Combination no. : 0 400 074 922 Contr.-rod trav.mm: 13.00...13.10 Injection pump Pump designation : PES4M55C32ORS107-2 Del.quantity cm3/ : 3.7...3.8 EP type number : 0 410 054 962 100H.: (3.6...3.9) Governor Governor design. : RSF375/2250M18 Governer no. : 0 420 021 017 Dispersion cm3/:0.2Customer-spec. information 100H.: (0.3) Customer : DB 2nd speed 1/min: 375.0 Contr.-rod trav. m: 6.1...6.3 Del.quantity cm3/: 0.6...0.7 100H:: (0.5...0.9) Engine : 0M616 (2.4 L) 1st version kW : 53.0 cm3/:0.1Dispersion 100H.: (0.1) TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. OC FULL-LOAD DELIV. AT FULL-LOAD STOP : 38...42 1st version Speed 1/min: 1000
Del.quantity cm3/: 37.5...38.5
1000H.: (36.5...39.5)
Dispersion cm3/: 2.50
1000H.: (3.00) Overflow valve : 1 417 413 012 Inlet press., bar : 1.00 Calibrating nozzle-holder : 0 681 343 009 HIGHEST RATED SPEED assembly 1st version Opening Control-lever position degrees: 50...0

3rd c-rod trav.mm: 7,80...8,20

Speed 1/min: 0...2500

4th speed 1/min: 2950 pressure, bar : 172...175 Test inj. tubing : 1 680 750 014 C-rod trav.mm : 0.00...1.00 Outside diameter x Wall thickness SET IDLE CONTROL-LEVER POSITION x Length mm : 6.00x2.00x600 1/min : 1000 Contr.-rod trav.mm: 1,40...1,50 (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. LOWEST RATED SPEED I per values ____ Control-lever position degrees: 9...13 Setting point w/out aux. spring Speed 1/min: 375 START OF DELIVERY Test pressure, bar: 30...32 Contr.-rod trav.mm: 6.2 : 2.20...2.30 Prestroke mm : (2.15...2.35) Testing: 1/min : 250 Contr.-rod trav.mm: 20.00...0.00 Speed Cam sequence : 1- 3- 4- 2 C-rod trav.mm min: 10.50

1/min : 375 Speed C-rod trav.mm : 6.10...6.30 C-rod trav.mm : 2.00 Speed 1/min : 720...820 1/min : 1000 Speed C-rod trav.mm max: 1.50 SET IDLE AUXILIARY SPRING 1/min : 450 Speed Contr.-rod trav.mm: 4,90...5,10 : (4.80...5,20) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 13.00...13.10 2nd speed 1/min : 1800 C-rod trav.mm : 11.70...11.90 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Del.quantity cm3/: 37.5...39.5 1000H.: (36.5...40,5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 37.5...39.5 1000H.: (36.5...40.5) cm3/: 2.50 Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 53.0...0.0 1000H.: (53.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 20.0...24.0 1000H.: (19.0...25.0) cm3/: 2.50 1000H.: (3.00) Dispersion LOW IDLE 1/min : 375 Speed Contr.-rod trav.mm: 6.10...6.30 Del.quantity cm3/: 6.0...7.0 1000H.: (5.5...9.0) Dispersion cm3/: 1.00 1000H.: (1.50)

Remarks:

80L

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.00 (1.00) : MB 2.5 F1 : 30.03.87 Test sheet Edition SD mark cyl. no. : 1 Superceeded Calibrating oil : ISO-4113 BASIC SETTING Combination no. : 0 400 075 960 1/mi: 1000 1st speed Injection pump Contr.-rod trav.mm: 11.30...11.40 Pump designation : PES5M55C32ORS153 EP type number : 0 410 055 991 Del.guantity cm3/: 3.1...3.2 Governor Governor design. : RSF350/2300M67-1 100H.: (3.0...3.3) : 0 420 021 098 Governer no. Customer-spec. information Dispersion cm3/:0.2Customer : DB 100H.: (0.3) : 0M602 Engine 2nd speed 1/min: 350.0 Contr.-rod trav. m: 5.4...5.6 Del.quantity cm3/: 0.5...0.6 100H.: (0.4...0.9) 1st version kW : 66.0 TEST BENCH REQUIREMENTS cm3/: 0.1 100H.: (0.1) Dispersion Calibrating-oil inlet temp. C : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version Speed 1/min: 1000 Del.quantity cm3/: 31.5...32.5 Inlet press., bar : 1.00 1000H:: (30.5...33.5) cm3/: 2.50 1000H:: (3.00) Calibrating nozzle-holder Dispersion : 0 681 343 009 assembly HIGHEST RATED SPEED Opening pressure, bar : 172...175 1st version Control-lever position degrees: 50...0

3rd c-rod trav.mm: 7,80...8,20 Test inj. tubing : 1 680 750 014 1/min : 0...2500 4th speed 1/min : 2950 Outside diameter x Wall thickness C-rod trav.mm : 0.00...1.00 x Length mm : 6.00x2.00x600 SET IDLE CONTROL-LEVER POSITION (A) Injection pump setting values Insp. values in parentheses 1/min : 1000 Set constant delivery quant. Contr.-rod trav.mm: 0,90...1,00 per values ____ LOWEST RATED SPEED I Control-lever START OF DELIVERY position degrees: 13...17 Test pressure, bar: 30...32 Setting point w/out aux. spring Speed 1/min: 350 Prestroke mm : 2.00...2.10 Contr.-rod trav.mm: 5.5 : (1.95...2.15) Contr.-rod trav.mm: 20.00...22.00 : 1- 2- 4- 5- 3 Cam sequence Testing:

Speed 1/min : 220 C-rod trav.mm min : 10.00 1/min : 350 Speed : 5.40...5.60 C-rod trav.mm C-rod trav.mm : 1.50 Speed 1/min : 640...740 Speed 1/min : 1000 C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING Speed 1/min : 400 Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1000 C-rod trav.mm : 11.30...11.40 2nd speed 1/min: 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 C-rod trav.mm : 10.60...10.80 FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 1800
Del.quantity cm3/: 34.0...35.5
1000H.: (33.0...36.5)
Dispersion cm3/: 2.50
1000H.: (3.00)
Speed 1/min: 2200 Del.quantity_cm3/: 33.5...35.5 1000H:: (32.5...36.5) Dispersion_cm3/: 2.50 1000H.: 3.00 STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/ : 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE 1/min : 2500 Speed Contr.-rod trav.mm: 7.80...8.20
Del.quantity cm3/: 22.0...26.0
1000H.: (21.0...27.0)
Dispersion cm3/: 2.50 1000H.: (3.00) LOW IDLE Speed 1/min: 350 Ccntr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.0...6.0 1000H.: (4.5...9.0) cm3/ : 1.00 Dispersion 1000H.: (1.50)

J10

SETTING PNUEUMATIC FAST IDLE (ELA)

Speed 1/min: 400 Contr.-rod trav.mm: (5,20...6,80) Del.quantity cm3/: (5,00...13,00)

1000H.: -Vacuum hPa : 0.40

Remarks:
SETTING OF FBG
-Setting and locking of FBG according
to start-of-delivery average of all
cylinders 19.3...19.7° (19.2...19.8°).
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.00 (1.00) Test sheet : MB 2.5 F : 30.03.87 Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING Combination no. : 0 400 075 961 1/mi: 1000 1st speed Injection pump Pump designation : PES5M55C32ORS153 Contr.-rod trav.mm: 11.30...11.40 EP type number : 0 410 055 991 Del.quantity cm3/: 3.1...3.2 Governor Governor design. : RSF350/2300M67 Governer no. : 0 420 021 094 100H.: (3.0...3.3) Customer-spec. information Dispersion cm3/:0.2Customer 100H.: (0.3) Engine : 0M602 2nd speed 1/min: 350.0 Contr.-rod trav. m: 5.4...5.6

Del.quantity cm3/: 0.5...0.6

100H.: (0.4...0.9)

Dispersion cm3/: 0.1

100H.: (0.1) 1st version kW : 66.0 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. OC : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version Speed 1/min: 1000
Del.quantity cm3/: 31.5...32.5
1000H.: (30.5...33.5)
Dispersion cm3/: 2.50 Inlet press., bar : 1.00 Calibrating nozzle-holder : 0 681 343 009 1000H.: (3.00) assembly HIGHEST RATED SPEED Opening pressure, bar : 172...175 1st version Control-lever position degrees: 50...0
2nd c-rod trav.mm: 7.80
Speed 1/min: 0...2500
4th speed 1/min: 2950 Test inj. tubing : 1 680 750 014 Outside diameter C-rod trav.mm : 0.00...1.00 x Wall thickness : 6.00x2.00x600 x Length mm SET IDLE CONTROL-LEVER (A) Injection pump setting values POSITION Insp. values in parentheses Set constant delivery quant. 1/min : 1000 Speed Contr.-rod trav.mm: 0,9...1,0 per values LOWEST RATED SPEED I Control-lever START OF DELIVERY Test pressure, bar: 30...32 position degrees: 13...17 Setting point w/out aux. spring : 2.00...2.10 1/min : 350 Prestroke mm : (1.95...2.15) Contr.-rod trav.mm: 5.5 Contr.-rod trav.mm: 20.00...22.00 Cam sequence : 1- 2- 4- 5-Testing:

1/min : 220 Speed C-rod trav.mm min: 10.00 Speed 1/min: 350 C-rod trav.mm: 5.40...5.60 C-rod trav.mm: 1.50 Speed 1/min: 640...740 1/min : 1000 Speed C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING 1/min : 400 Speed Contr.-rod trav.mm: 4,00...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed : 11.30...11.40 C-rod trav.mm 2nd speed 1/min : 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 C-rod trav.mm : 10.60...10.80 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 34.0...35.5 1000H.: (33.0...36.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 33.5...35.5 1000H.: (32.5...36.5) cm3/: 2.50 Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/ : 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/ : 22.0...26.0 1000H.: (21.0...27.0) cm3/: 2.50 1000H.: (3.00) Dispersion LOW IDLE 1/min : 350 Speed Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.0...6.0 1000H.: (4.5...9.0) Dispersion cm3/: 1.00 1000H.: (1.50) J12

Speed 1/min : 400

SETTING PNUEUMATIC FAST IDLE

Contr.-rod trav.mm: (5,2...6,8) Del.quantity cm3/: -1000H.: (5,0...13,0) hPa : 0.4 Vacuum

Remarks: SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 350 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.00 (1.00) Test sheet : MB 2,5 F2 Edition : 07.11.86 Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING : 0 400 075 964 Combination no. 1/mi: 1000 1st speed Injection pump Pump designation : PESSMS5C32ORS162 Contr.-rod trav.mm: 11.30...11.40 EP type number : 0 410 055 983 Del.quantity cm3/ : 3.1...3.2 Governor Governor design. : RSF340/2300M60-15 Governer no. : 0 420 021 081 100H.: (3.0...3.3) cm3/:0.2Customer-spec. information Dispersion Customer : DB 100H.: (0.3) : 0M602-LVP MJ:86 Engine 1/min: 315.0 2nd speed Contr.-rod trav. m: 5.2...5.4

Del.quantity cm3/: 0.5...0.6

100H.: (0.4...0.9)

Dispersion cm3/: 0.1
100H.: (0.1) 1st version kW : 66.0 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. OC : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version 1/min: 1000 Speed Del.quantity cm3/: 31.0...32.0 1000H.: (30.0...33.0) Dispersion cm3/: 2.50 1000H.: (3.00) Inlet press., bar: 1.00 Calibrating nozzle-holder : 0 681 343 009 assembly HIGHEST RATED SPEED Opening pressure bar : 172...175 1st version Control-lever position degrees: 50...0

3rd c-rod trav.mm: 7,10...7,50
Speed 1/min: 0...2500

4th speed 1/min: 2950 Test inj. tubing : 1 680 750 014 Outside diameter C-rod trav.mm : 0.00...1.00 x Wall thickness : 6.00x2.00x600 x Length mm SET IDLE CONTROL-LEVER POSITION (A) Injection pump setting values Speed 1/min: 1000 Contr.-rod trav.mm: 1,90...2,00 Insp. values in parentheses Set constant delivery quant. per values ____ LOWEST RATED SPEED I Control-lever START OF DELIVERY Test pressure, bar: 30...32 position degrees: 13...17 Setting point w/out aux. spring : 1.70...1.80 1/min : 315 Prestroke mm : (1.65...1.85) Contr.-rod trav.mm: 20.00...22.00 Contr.-rod trav.mm: 5.3 Cam sequence : 1- 2- 4- 5-Testing: J13

Speed 1/min: 220 C-rod trav.mm min: 7.50 Speed 1/min: 315 HIGH IDLE Speed 1/min : 2500 : 5.20...5.40 C-rod trav.mm Contr.-rod trav.mm: 7.10...7.50 : 2.50 Del.quantity cm3/: 16.0...20.0 1000H.: (15.0...21.0) C-rod tray.mm 1/min : 530...630 Speed Speed cm3/: 2.50 1000H:: (3.00) 1/min : 1000 Dispersion C-rod trav.mm max: 2.00 SET IDLE AUXILIARY SPRING LOW IDLE 1/min : 380 Speed Contr.-rod trav.mm: 3,90...4,10 : (3,80...4,20) 1/min : 315 Speed Contr.-rod trav.mm: 5.20...5.40 Del.quantity cm3/: 5.0...6.0 TORQUE CONTROL 1900H.: (4.5...9.0) Torque-control curve - 1st version cm3/: 1.00Dispersion 1st speed 1/min : 1000 1000H.: (1.50) : 11.30...11.40 C-rod trav.mm 2nd speed 1/min: 1600 C-rod trav.mm: 10.90...11.10 3rd speed 1/min: 2250 SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) C-rod trav.mm : 10.30...10.50 Control lever at idle stop 1/min : 340 Speed Contr.-rod trav.mm: (12,5...13,9) compensator (LDA, ADA, ALDA) Del.quantity cm3/: (33,0...41,0) 1000H.: -1st version Electric current A: 1,8 Control lever at full-load stop Speed 1/min: 2950 Setting Speed 1/min: 1000 Pressure hPa: 930 Contr.-rod trav.mm: 0...1,0 Contr.-rod trav.mm: 0.10...0.50 Electric current short-duration A: 3.0 Measurement Starting test 1/min : 1000 Speed Speed 1/min : 100 Del.quantity cm3/: - min. 1000H.: 55,0 1st pressure hPa : 840 C-rod trav.mm : 1.10...1.30 2nd pressure hPa : 700 Remarks: Start-of-delivery spacing (difference) between max/min value 1° cam angle C-rod trav.mm : 2.30...2.70 FUEL-DELIVERY CHARACTERISTICS maximum. 1/min : 1600 Speed Del.quantity cm3/: 34.0...35.5 1000H.: (33.0...36.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2250 Del.quantity cm3/: 32.0...34.0 CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction 1000H.: (31.0...35.0) cm3/: 2.50 allowable after switchover point (of Dispersion starting cam) up to 1000 1/min. 1000H.: 3.00 Control-lever position 46.5 control-rod travel deduction must be STARTING FUEL DELIVERY greater than 0.2 mm after switchover point (of starting cam). 1/min : 100 Speed Del.quantity cm3/ : 55.0...0.0 TESTING PNEUMATIC SHUTOFF DEVICE 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 -Control lever at idle stop. With n = 315 1/min. and pu' = 450 mbar. J14

control rod must move quickly to
control-rod travel = 0 mm

START-OF-DELIVERY ADJUSTMENT
-Start-of delivery adjustment and lock
after start-of-delivery mean value of
all cylinders, 17.3...17.7°
(17.2...17.8°) angular displacement of
the cam after cylinder 1.

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BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                         SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.00 (1.00)
                     : MB 2,5 F4
Test sheet
Edition
                     : 05.11.86
Superceeded
                                                         SD mark cyl. no. : 1
Calibrating oil
                     : ISO-4113
                                                         BASIC SETTING
Combination no.
                     : 0 400 075 968
                                                         1st speed
                                                                          1/mi: 1000
Injection pump
Pump designation : PES5M55C32ORS153
                                                         Contr.-rod trav.mm: 11.30...11.40
EP type number
                     : 0 410 055 991
                                                         Del.quantity cm3/: 3.1...3.2
Governor
Governor design. : RSF340/2300M59-14
                                                                         100H.: (3.0...3.3)
Governer no.
                     : 0 420 021 074
Customer-spec. information
                                                         Dispersion
                                                                         cm3/:0.2
Customer
                     : DB
                                                                         100H.: (0.3)
Engine
                     : 0M602
                                                         2nd speed 1/min: 315.0
Contr.-rod trav. m: 5.4...5.6
Del.quantity cm3/: 0.5...0.6
1st version kW
                     : 66.0
                                                                        100H.: (0.4...0.9)
cm3/: 0.1
100H.: (0.1)
TEST BENCH REQUIREMENTS
                                                         Dispersion
Calibrating-oil inlet temp. OC
                     : 38...42
                                                         FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                     : 1 469 990 351
                                                         1st version
                                                                         1/min: 1000
                                                         Speed
Inlet press., bar: 1.00
                                                         Del.quantity cm3/: 31.5...32.5
                                                                       1000H.: (30.5...33.5)
cm3/ : 2.50
1000H.: (3.00)
Calibrating nozzle-holder
                                                         Dispersion
              : 0 681 343 009
 assembly
                                                         HIGHEST RATED SPEED
Opening
 pressure, bar : 172...175
                                                         1st version
                                                         Control-lever
                                                         position degrees: 50...0

3rd c-rod trav.mm: 7,80...8,20

Speed 1/min: 2500

4th speed 1/min: 2950
Test inj. tubing : 1 680 750 014
Outside diameter
                                                            C-rod trav.mm : 0.00...1.00
x Wall thickness
                     : 6.00X2.00X600
x Length mm
                                                         SET IDLE CONTROL-LEVER
                                                         POSITION
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                                       1/min : 1000
                                                         Speed
                                                         Contr.-rod trav.mm: 0,9...1.0
    per values ____
                                                         LOWEST RATED SPEED I
                                                         Control-lever
START OF DELIVERY
Test pressure, bar: 30...32
                                                          position degrees: 13...17
                                                         Setting point w/out aux. spring
Prestroke mm : 2.00...2.10 : (1.95...2.15)
Contr.-rod trav.mm: 20.00...22.00
                                                                      1/min : 315
                                                         Contr.-rod trav.mm: 5.5
                                         3
Cam sequence : 1- 2- 4- 5-
                                                         Testing:
J16
```

Speed 1/min: 220 C-rod trav.mm min: 8.00 1/min : 315 mm : 5.40...5.60 Speed C-rod trav.mm : 1.50 C-rod trav.mm 1/min: 630...730 Speed Speed 1/min : 1000 C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING 1/min : 380 Speed Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1000 C-rod trav.mm : 11.30...11.40 2nd speed 1/min : 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 C-rod trav.mm : 10.60...10.80 FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 1800 Del.quantity cm3/: 34.0...35.5 1000H.: (33.0...36.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 33.5...35.5 1000H.: (32.5...36.5) cm3/: 2.50 Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) cm3/: 2.50 1000H.: (3.00) Dispersion LOW IDLE Speed 1/min: 315 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.0...6.0 1000H.: (4.5...9.0) Dispersion cm3/: 1.00 1000H.: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop 1/min : 340 Contr.-rod trav.mm: (12,6...14,0) Del.quantity cm3/:1000H.: (33,0...41,0)
Electric current A: 1,8
Control lever at full-load stop 1/min : 2950 Speed Contr.-rod trav.mm: 0,0...1,0 Electric current short-duration A: 3,0 Starting test 1/min: 100 Speed Del.quantity cm3/: - min. 1000H.: 55,0 Remarks:

SETTING OF FBG

Cám angle according to cyl. 1.

-Setting and locking of FBG according

to start-of-delivery average of all cylinders 19.3...19.70 (19.2...19.80).

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.00 (1.00) : MB 2,5 F5 Test sheet Edition : 05.11.86 Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING : 0 400 075 969 Combination no. 1/mi: 1000 1st speed Injection pump Pump designation : PES5M55C32ORS153 Contr.-rod trav.mm: 11.30...11.40 EP type number : 0 410 055 991 Governor Del.quantity cm3/: 3.1...3.2 Governor design. : RSF350/2300M55-16 Governer no. : 0 420 021 070 100H.: (3.0,..3.3) Customer-spec. information cm3/:0.2Dispersion Customer : DB 100H.: (0.3) : 0M602 Engine 1/min: 350.0 2nd speed 1st version kW : 66.0 Contr.-rod trav. m: 5.4...5.6 Del.quantity cm3/: 0.5...0.6 100H.: (0.4...0.9) TEST BENCH REQUIREMENTS cm3/:0.1Dispersion Calibrating-oil inlet temp. OC 100H.: (0.1) : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version Speed 1/min: 1000 Del.quantity cm3/: 31.5...32.5 Inlet press., bar: 1.00 1000H.: (30.5...33.5) cm3/ : 2.50 Calibrating nozzle-holder Dispersion 1000H.: (3.00) : 0 681 343 009 assembly | HIGHEST RATED SPEED Opening pressure, bar : 172...175 1st version Control-lever position degrees: 50...0
3rd c-rod trav.mm: 7,80...8,20 Test inj. tubing : 1 680 750 014 1/min : 2500 Outside diameter 4th speed 1/min : 2950 x Wall thickness C-rod trav.mm : 0.00...1.00 : 6.00x2.00x600 x Length mm SET IDLE CONTROL-LEVER **POSITION** (A) Injection pump setting values Insp. values in parentheses 1/min : 1000 Set constant delivery quant. Contr.-rod trav.mm: 0,9...1,0 per values ____ LOWEST RATED SPEED I START OF DELIVERY Control-lever Test pressure, bar: 30...32 position degrees: 13...17 Setting point w/out aux. spring Speed 1/min: 350 : 2.00...2.10 : (1.95...2.15) Prestroke mm Contr.-rod trav.mm: 5.5 Contr.-rod trav.mm: 20.00...22.00 Cam sequence : 1- 2- 4- 5- 3 Testing:

1/min : 220 Speed C-rod trav.mm min : 10.00 Speed 1/min : 350 C-rod trav.mm : 5.40...5.60 : 1.50 C-rod trav.mm Speed 1/min: 640...740 1/min : 1000 Speed C-rod trav.mm max: 1.00 SET IDLE AUXILIAN: 510... Speed 1/min: 400 Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) SET IDLE AUXILIARY SPRING TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 11.30...11.40 2nd speed 1/min : 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 C-rod trav.mm : 10.60...10.80 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Speed 1/min: 1800
Del.quantity cm3/: 34.0...35.5
1000H.: (33.0...36.5)
Dispersion cm3/: 2.50
1000H.: (3.00)
Speed 1/min: 2200
Del.quantity cm3/: 33.5...35.5
1000H.: (32.5...36.5)
Dispersion cm3/: 2.50
1000H.: 3.00 1000H.: 3.00 STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) cm3/: 2.50 Dispersion 1000H.: (3.00) LOW IDLE Speed 1/min: 350 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.0...6.0 1000H.: (4.5...9.0) Dispersion cm3/: 1.00 1000H.: (1.50)

SETTING PNUEUMATIC FAST IDLE (ELA)

1/min : 400 Speed Contr.-rod trav.mm: 5,2...6,8 Del.quantity cm3/: - 1000H.: (5,0...13,0)

hPa : 0,40 Vacuum

Remarks: SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.70 (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 350 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49° max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.00 (1.00) Test sheet : MB 2.5 G : 05.11.86 Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING Combination no. : 0 400 075 970 1/mi: 1000 1st speed Injection pump Pump designation : PES5M55C32ORS153 EP type number : 0 410 055 991 Contr.-rod trav.mm: 11.30...11.40 Del.quantity cm3/: 3.1...3.2 Governor Governor design. : RSF350/2300M55-13 Governer no. : 0 420 021 067 100H.: (3.0...3.3) Customer-spec. information Dispersion cm3/:0.2Customer : DB 100H.: (0.3) Engine : 0M602 2nd speed 1/min: 350.0 Contr.-rod trav. m: 5.4...5.6 Del.quantity cm3/: 0.5...0.6 100H:: (0.4...0.9) 1st version kW : 66.0 TEST BENCH REQUIREMENTS cm3/:0.1Dispersion Calibrating-oil inlet temp. C 100H.: (0.1) : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version 1/min: 1000 Speed Del.quantity cm3/: 31.5...32.5 Inlet press., bar: 1.00 1000H.: (30.5...33.5) cm3/ : 2.50 Calibrating nozzle-holder Dispersion : 0 681 343 009 1000H.: (3.00) assembly HIGHEST RATED SPEED Opening pressure, bar : 172...175 1st version Control-lever position degrees: 50...0 Test inj. tubing : 1 680 750 014 3rd c-rod trav.mm : 7,80...8,20 Speed 1/min : 2500 4th speed 1/min : 2950 Outside diameter x Wall thickness C-rod tray.mm : 0.00...1.00 : 6.00x2.00x600 x Length mm SET IDLE CONTROL-LEVER (A) Injection pump setting values POSITION Insp. values in parentheses Set constant delivery quant. 1/min: 1000 Contr.-rod trav.mm: 0,9...1,0 per values ____ LOWEST RATED SPEED I START OF DELIVERY Control-lever Test pressure, bar: 30...32 position degrees: 13...17 Setting point w/out aux. spring Speed 1/min: 350 : 2.00...2.10 Prestroke mm : (1.95...2.15) Contr.-rod trav.mm: 5.5 Contr.-rod trav.mm: 20.00...22.00 Cam sequence : 1- 2- 4- 5- 3 Testing:

1/min : 220 Speed C-rod trav.mm min : 10.00 Speed 1/min : 350 C-rod trav.mm : 5.40...5.60 C-rod trav.mm : 1.50 1/min : 640...740 Speed 1/min : 1000 Speed C-rod tray.mm max: 1.00 SET IDLE AUXILIARY SPRING Speed 1/min : 400 Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1000 : 11.30...11.40 C-rod trav.mm 2nd speed 1/min : 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 C-rod trav.mm : 10.60...10.80 FUEL-DELIVERY CHARACTERISTICS Speed 1/min : 1800 Del.quantity cm3/: 34.0...35.5 1000H:: (33.0...36.5) Dispersion cm3/: 2.50 1000H:: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 33.5...35.5 1000H.: (32.5...36.5) cm3/: 2.50Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) cm3/: 2.50Dispersion 1000H.: (3.00) LOW IDLE Speed 1/min : 350 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.0...6.0 1000H:: (4.5...9.0) Dispersion cm3/: 1.00 1000H.: (1.50)

SETTING PNUEUMATIC FAST IDLE (ELA)

Speed 1/min: 400 Contr.-rod trav.mm: (5,2...6,8) Del.quantity cm3/:-1000H.: (5,0...13,0)

Vacuum hPa : 0,40

Remarks: SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-72-144-216-288 Tolerance + - : 0.00 (1.00) Test sheet : MB 3,0 W6 : 09.03.87 Edition Superceeded BASIC SETTING : ISO-4113 Calibrating oil 1/mi: 1000 1st speed Combination no. : 0 400 075 971 Contr.-rod trav.mm: 13.00...13.10 Injection pump Pump designation : PESSM55C32ORS108-3 Del.quantity cm3/: 3.7...3.8 EP type number : 0 410 055 982 Governor 100H.: (3.6...3.9) Governor design. : RSF350/2300M16 Governér no. : 0 420 021 015 Dispersion cm3/:0.2Customer-spec. information 100H.: (0.3) Customer : DB 1/min: 350.0 2nd speed Contr.-rod trav. m: 6.1...6.3 Engine : 0M617 (3.0 L) Del.quantity cm3/: 0.6...0.7 100H.: (0.5...0.9) 1st version kW : 65.0 cm3/: 0.1 100H.: (0.1) Dispersion TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. OC FULL-LOAD DELIV. AT FULL-LOAD STOP : 38...42 1st version Speed 1/min: 1000
Del.quantity cm3/: 37.5...38.5
1000H.: (36.5...39.5)
Dispersion cm3/: 2.50
1000H.: (3.00) Overflow valve : 1 417 413 012 Inlet press., bar: 1.00 Calibrating nozzle-holder : 0 681 343 009 assembly HIGHEST RATED SPEED 1st version Control-lever Opening position degrees: 50...0

3rd c-rod trav.mm: 7,80...8,20
 Speed 1/min: 2500
4th speed 1/min: 2950 pressure, bar : 172...175 Test inj. tubing : 1 680 750 014 C-rod trav.mm : 0.00...1.00 Outside diameter x Wall thickness SET IDLE CONTROL-LEVER POSITION x Length mm : 6.00x2.00x600 1/min : 1000 Speed (A) Injection pump setting values Contr.-rod trav.mm: 1,4...1,5 Insp. values in parentheses Set constant delivery quant. LOWEST RATED SPEED I per values ____ Control-lever position degrees: 9...13 START OF DELIVERY Setting point w/out aux. spring 1/min : 350 Test pressure, bar: 30...32 Speed Contr.-rod trav.mm: 6.2 : 2.20...2.30 Prestroke mm : (2.15.,.2.35) Contr.-rod trav.mm: 20.00...0.00 Cam sequence : 1-2-4-5-3 Testing: 1/min : 250 Sp∉ed C-rod trav.mm min: 9.50

1/min : 350 Speed C-rod trav.mm : 6.10...6.30 C-rod trav.mm : 2.00 Speed 1/min : 720...820 1/min : 1000 Speed C-rod trav.mm max: 1.50 SET IDLE AUXILIARY SPRING Speed 1/min : 450 Contr.-rod trav.mm: 4,70...4,90 : (4,60...5,00) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1000 C-rod trav.mm : 13.00...13.10 2nd speed 1/min: 1800 C-rod trav.mm : 12.00...12.20 3rd speed 1/min : 2200 C-rod trav.mm : 11.70...11.90 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 37.5...39.5 1000H.: (36.5...40.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 37.5...39.5 1000H.: (36.5...40.5) cm3/: 2.50 Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/ : 53.0...0.0 1000H.: (53.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 20.0...24.0 1000H.: (19.0...25.0) cm3/: 2.50Dispersion 1000H.: (3.00) LOW IDLE 1/min : 350 Speed Contr.-rod trav.mm: 6.10...6.30 Del.quantity cm3/: 6.0...7.0 1000H.: (5.5...9.0) cm3/: 1.00 1000H.: (1.50) Dispersion

Remarks:

J23

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/m n...450 1/min.

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 350 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

	BOSCH INJ. PUMP TE	IS I				
	Note inst. in remarks column			CD 222 C220	ino ⁰ cc.	0-72-1//-216-288
	Test sheet Edition	: MB 3.0 W7	į	SD ang. spacing CS: Tolerance + - :		0.00 (1.00)
	Superceeded Calibrating oil	: 07.03.07		BASIC SETTING	3	
	Combination no.		į	1st speed	1/mi:	1000
		. 0 400 012 712	į	Contrrod to	av.mm:	13.0013.10
	Injection pump Pump designation EP type number	: PES5M55C320RS1	08-3	Del.quantity	cm3/:	3.73.8
	Governor design.				100H.:	(3.63.9)
	Governer no.	: 0 420 021 014	'	Dispersion	cm3/:	0.2
	Customer-spec. inf Customer	formation : DB			100H.:	(0.3)
	Engine			2nd speed Contrrod tr	av. m:	6.16.3
	1st version kW	: 65.0	!	Del_quantity	100H.:	(0.50.9)
	TEST BENCH REQUIRE	EMENTS	 	Dispersion	cm3/:	(0.1)
	Calibrating-oil inlet temp. C	• 78 /2	1	FULL-LOAD DEL	_IV. AT	FULL-LOAD STOP
	Overflow valve	. 5072	!	1st version Speed	1/min:	1000
	Over Itom varve	: 1 417 413 012	İ	Del.quantity	cm3/:	37.538.5 (36.539.5) 2.50
1	Inlet press., bar	: 1.00	1	Dispersion (m3/:	2.50 (3.00)
	Calibrating nozzle assembly	e-holder : 0 681 343 009	1 8 1	HIGHEST RATES	SPEED	
	Opening pressure, bar	: 172175	!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	Control-lever position de 3rd c-rod tra	egrees:	7,808,20
	Test inj. tubing	: 1 680 750 014	 	Speed 1 4th speed 1 C-rod tray	/min :	2950 0.001.00
	Outside diameter x Wall thickness		i	SET IDLE CONT		
	x Length mm	: 6.00x2.00x600	1	POSITION Speed		
	(A) Injection pump Insp. values i		i I	Contrrod tr	av.mm:	1,45
	Set constant of per values			LOWEST RATED SPEED I Control-lever position degrees: 9		
	START OF DELIVERY Test pressure, bar	: 3032	1 1 1	Setting point Speed 1 Contrrod tr	tw/gut /min :	aux. spring 350
	Prestroke mm	: 2,202.30 : (2.152.35)	; 	Testing:		
	Contrrod trav.mm Cam sequence	a: 20.000.00	3	Speed 1 C-rod trav.mm	/min :	250 9.50
- 1						

1/min : 350 Speed C-rod trav.mm : 6.10...6.30 C-rod trav.mm : 2.00 Speed 1/min : 720...820 Speed 1/min : 1000 C-rod trav.mm max: 1.50 SET IDLE AUXILIARY SPRING 1/min : 450 Speed Contr.-rod trav.mm: 4,79...4,90 (4,60...5,00) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 13.00...13.10 2nd speed 1/min : 1800 C-rod trav.mm : 12.00...12.20 3rd speed 1/min : 2200 C-rod trav.mm : 11.70...11.90 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 37.5...39.5 1000H.: (36.5...40.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 37.5...39.5 1000H.: (36.5...40.5) cm3/: 2.50Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 53.0...0.0 1000H.: (53.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min : 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 20.0...24.0 1000H.: (19.0...25.0) Dispersion cm3/: 2.501000H.: (3.00) LOW IDLE 1/min : 350 Speed Contr.-rod trav.mm: 6.10...6.30 Del.quantity cm3/: 6.0...7.0 1000H.: (5.5...9.0) cm3/: 1.00Dispersion 1000H.: (1.50)

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                       SD ang. spacing ^{0}CS: 0-72-144-216-288 Tolerance + - ^{0}: 0.50 (0.75)
Test sheet
                    : MB 3,0 W8
                    : 12.09.86
Edition
                                                       BASIC SETTING
Superceeded
                   : ISO-4113
Calibrating oil
                                                       1st speed
                                                                      1/mi: 1650
                    : 0 400 075 973
Combination no.
                                                       Contr.-rod trav.mm: 11.90...12.00
Injection pump
Pump designation : PES5M55C32ORS108-2
                                                       Del.quantity cm3/: 3.5...3.6
EP type number
                   : 0 410 055 984
                                                                     100H.: (3.4...3.7)
Governor
Governor design. : RSF350/1700M18-3
Governer no.
                                                                     cm3/:0.2
                   : 0 420 021 061
                                                       Dispersion
Customer-spec. information
                                                                     100H.: (0.3)
Customer
                    : DB
                                                      2nd speed 1/min: 350.0
Contr.-rod trav. m: 6.0...6.2
Del.quantity cm3/: 0.6...0.7
100H.: (0.5...0.9)
Engine
                    : 0M617 (3.0 l)
1st version kW
                    : 54.0
                                                                     cm3/: 0.1
100H.: (0.1)
                                                       Dispersion
TEST BENCH REQUIREMENTS
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
Calibrating-oil inlet temp. °C
                    : 38...42
                                                       1st version
                                                      Speed 1/min: 1650
Del.quantity cm3/: 35.5...36.5
Overflow valve
                    : 1 417 413 012
                                                                    1000H.: (34.5...37.5)
cm3/ : 2.50
Inlet press., bar: 1.00
                                                      Dispersion
                                                                    1000H.: (3.00)
Calibrating nozzle-holder
           : 0 681 343 009
                                                      HIGHEST RATED SPEED
 assembly
                                                       1st version
                                                       Control-lever
Opening
                                                      position degrees: 50...0
3rd c-rod trav.mm: 6,80...7,20
 pressure, bar : 172...175
                                                                  1/min : 1900
                                                         Speed
                                                                    1/min : 2350
Test inj. tubing : 1 680 750 014
                                                       4th speed
                                                         C-red tray.mm : 0.00...1.00
Outside diameter
x Wall thickness
                                                      SET IDLE CONTROL-LEVER
                    : 6.00X2.00X600
                                                      POSITION
x Length mm
                                                                    1/min : 600
                                                      Contr.-rod trav.mm: 1,4...1,5
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                      LOWEST RATED SPEED I
                                                      Control-lever
    per values ____
                                                       position degrees: 10...14
                                                      Setting point w/out aux. spring
START OF DELIVERY
Test pressure, bar: 30...32
                                                                   1/min : 350
                                                      Speed
                                                      Centr.-rod trav.mm: 6.1
Prestroke mm
                    : 2.20...2.30
                    : (2.15...2.35)
                                                      Testing:
Contr.-rod trav.mm: 20.00...22.00
                                                                    1/min : 250
                                                      Speed
                                                      C-rod trav.mm min : 10,00
Cam sequence : 1- 2- 4- 5-
J26
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Speed 1/min : 450 : 4.60...4.80 C-rod trav.mm C-rod trav.mm : 2.00 1/min : 700...800 Speed Speed 1/min : 300 C-rod trav.mm max: 9.50 SET IDLE AUXILIARY SPRING Speed 1/min : 450 Contr.-rod trav.mm: 4,60...4,80 : (4,50...4,90) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1650 C-rod trav.mm : 11.90...12.00 2nd speed 1/min : 1200 C-rod trav.mm : 12.10...12.30 3rd speed 1/min: 600 C-rod trav.mm : 12.70...12.90 FUEL-DELIVERY CHARACTERISTICS 1/min : 1200 Speed Del.quantity cm3/: 34.5...36.5 1000H.: (33.5...37.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 600 Del.quantity cm3/: 34.5...36.5 1000H.: (33.5...37.5) cm3/: 2.50 Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY Speed 1/min : 100 Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE 1/min : 1900 Speed Contr.-rod trav.mm: 6.80...7.20 Del.quantity cm3/: 16.0...20.0 1000H.: (15.0...21.0) Dispersion cm3/: 2.50 1000H.: (3.00) LOW IDLE 1/min : 350 Speed Contr.-rod trav.mm: 6.00...6.20 Del.quantity cm3/: 6.0...7.0 1000H.: (5.5...9.0) Dispersion cm3/: 1.00 1000H.: (1.50)

CHECKING THE IDLE-SPEED AUXILIARY

-Control-lever position 47°. No change in control-rod travel after switchover point up to 550 1/min, control-lever position 30°. Speed range 350 1/min...450 1/min.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 350 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

Remarks:

SPRING CUTOFF

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                      SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00)
Test sheet
                    : MB 3,0 W9
: 30.03.87
Edition
Superceeded
                                                      SD mark cyl. no. : 1
Calibrating oil : ISO-4113
                                                      BASIC SETTING
Combination no.
                    : 0 400 076 974
                                                      1st speed
                                                                      1/mi: 1000
Injection pump
Pump designation : PES6M55C32ORS156
                                                      Contr.-rod trav.mm: 11.30...11.40
EP type number
                    : 0 410 056 995
                                                      Del. quantity cm3/ : 3.1...3.2
Governor
Governor design. : RSF315/2300M66-1
                                                                     100H.: (3.0...3.3)
Governer no.
                   : 0 420 021 097
                                                                    cm3/: 0.2
Customer-spec. information
                                                      Dispersion
Customer
                   : DB
                                                                     100H.: (0.3)
Engine
                    : 0M603-3.0
                                                      2nd speed 1/min: 290.0
Contr.-rod trav. m: 5.4...5.6
Del.quantity cm3/: 0.5...0.6
1st version kW
                    : 80.0
                                                                    100H.: (0.5...0.9)
cm3/: 0.1
100H.: (0.1)
TEST BENCH REQUIREMENTS
                                                      Dispersion
Calibrating-oil inlet temp. OC
                    : 38...42
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                    : 1 469 990 351
                                                      1st version
                                                                     1/min: 1000
                                                      Speed
                                                      Del.quantity cm3/: 31.5...32.5
Inlet press., bar : 1.00
                                                                   1000H: (30.5...33.5) cm3/: 2.50
Calibrating nozzle-holder
                                                      Dispersion
                                                                    1000H.: (3.00)
                  : 0 681 343 009
 assembly
Opening
                                                      HIGHEST RATED SPEED
 pressure, bar : 172...175
                                                      1st version
                                                      Control-lever
                                                      position degrees: 0...50
3rd c-rod trav.mm: 7.80...8,20
Speed 1/min: 2500
Test inj. tubing : 1 680 750 014
                                                        h speed 1/min : 2950
C-rod trav.mm : 0.00...1.00
Outside diameter
                                                      4th speed
x Wall thickness
                    : 6.00x2.00x600
x Length mm
                                                      SET IDLE CONTROL-LEVER
                                                      POSITION
(A) Injection pump setting values
                                                                   1/min : 1000
    Insp. values in parentheses
                                                      Speed
    Set constant delivery quant.
                                                      Contr.-rod trav.mm: 0,9...1,0
    per values ____
                                                      LOWEST RATED SPEED I
START OF DELIVERY
                                                      Control-lever
Test pressure, bar: 30...32
                                                       position degrees: 13...17
                                                      Setting point w/out aux. spring
                                                                  1/min : 290
Prestroke mm
                    : 2.00...2.10
                                                      Contra-rod trav.mm: 5.5
                    : (1.95...2.15)
Contr.-rod trav.mm: 20.00...22.00
Cam sequence : 1-5-3-6-2-4
                                                      Testing:
```

1/min : 220 Speed C-rod trav.mm min : 7.00 1/min : 290 Speed : 5.40...5.60 C-rod trav.mm : 1.50 C-rod trav.mm Speed 1/min : 620...720 Speed 1/min : 1000 Speed C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING Speed 1/min : 360 Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed Speed C-rod trav.mm : 11.30...11.40 2nd speed 1/min : 1800 C-rod trav.mm : 10.90...11.10 3rd špeed 1/min : 2200 C-rod trav.mm : 10.60...10.80 Remarks: FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 34.0...35.5 1000H.: (33.0...36.5) cm3/: 2.50 Dispersion 1000H.: (3.00)

Speed 1/min: 2200

Del.quantity cm3/: 33.5...35.5

1000H.: (32.5...36.5)

Dispersion cm3/: 2.50 1000H.: 3.00 maximum. STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/ : 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) cm3/: 2.50Dispersion 1000H.: (3.00) LOW IDLE Speed 1/min: 290 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.5...6.5 1000H.: (5.0...9.5) cm3/: 1.00Dispersion 1000H.: (1.50) K01

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop 1/min : 315 Contr.-rod trav.mm: (12,6...14,0) Del.quantity cm3/: (32,0...40,0) 1000H.: -Electric current A: 1,8 Control lever at full-load stop 1/min: 2950 Contr.-rod trav.mm: (0,0...1,0) Electric current short-duration A: 3.0 Starting test 1/min : 100 Del.quantity cm3/: 55,0 min. 1000H.: -SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1. Start-of-delivery spacing (difference) between max/min value 1° cam angle CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

SPRING CUTOFF

-Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

ADJUSTING ACTIVE JOLT DAMPING (ARD)

Control lever at full-load stop. With n= 1000 1/min., I = 2.5 A, control-rod-travel reduction = 2.25...2.55 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

: MB 3,0 W10 : 30.03.87 Test sheet Edition

Superceeded

Calibrating oil : ISC-4113

: 0 400 076 975 Combination no.

Injection pump

Pump designation : PES6M55C32ORS156

EP type number : 0 410 056 995

Governor

Governor design. : RSF315/2300M66 Governer no. : 0 420 021 066

Customer-spec. information

Customer

: 0M603-3.0 Engine

1st version kW : 80.0

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar : 1.00

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant.

per values ____

START OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Contr.-rod trav.mm: 20.00...22.00

Cam sequence : 1- 5- 3- 6- 2-

Speed 1/min: 220 C-rod trav.mm min: 7.00 Speed 1/min: 290 SD ang. spacing $^{\circ}$ CS: 0-60-120-180-240-300 Tolerance + - $^{\circ}$: 0.00 (1.00) C-rod trav.mm : 5.40...5.60 C-rod trav.mm : 1.50 1/min : 620...720 Speed Speed 1/min : 1000 SD mark cyl. no. : 1 C-rod trav.mm max: 1.00 BASIC SETTING SET IDLE AUXILIARY SPRING 1/mi: 1000 1st speed Contr.-rod trav.ma: 11.30...11.40 Del.quantity cm3/ : 3.1...3.2 TORQUE CONTROL Torque-control curve - 1st version 100H.; (3.0...3.3) 1st speed 1/min : 1000 C-rod trav.mm : 11.30...11.40 cm3/: 0.2 2nd speed 1/min: 1800 Dispersion C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 C-rod trav.mm : 10.60...10.80 100H.: (0.3) 1/min: 290.0 2nd speed Contr.-rod trav. m: 5.4...5.6 FUEL-DELIVERY CHARACTERISTICS Del.quantity cm3/: 0.5...0.6 1/min : 1800 Speed Speed 1/min: 1800
Del.quantity cm3/: 34.0...35.5
1000H.: (33.0...36.5)
Dispersion cm3/: 2.50
1000H.: (3.00)
Speed 1/min: 2200
Del.quantity cm3/: 33.5...35.5
1000H.: (32.5...36.5)
Dispersion cm3/: 2.50
1000H.: 3.00 100H.: (0.5...0.9) cm3/: 0.1 100H.: (0.1) Dispersion FULL-LOAD DELIV. AT FULL-LOAD STOP 1st version Speed 1/min: 1000 Del.quantity cm3/: 31.5...32.5 1000H.: (30.5...33.5) cm3/ : 2.50 1000H.: (3.00) Dispersion STARTING FUEL DELIVERY HIGHEST RATED SPEED 1/min : 100 1st version Speed Del.quantity cm3/: 55.0...0.0 Control-lever position degrees: 50...0
3rd c-rod trav.mm: 7.80...8,20
Speed 1/min: 2500
4th speed 1/min: 2950 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 1/min : 2950 HIGH IDLE 4th speed Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 C-rod trav.mm : 0.00...1.00 Del.quantity cm3/: 22.0...26.0 1000H: (21.0...27.0) Dispersion cm3/: 2.50 SET IDLE CONTROL-LEVER POSITION 1/min: 1000 Speed Contr.-rod trav.mm: 0,9...1,0 1000H.: (3.00) LOW IDLE LOWEST RATED SPEED I Control-lever Speed 1/min: 290 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.5...6.5 1000H.: (5.0...9.5) position degrees: 13...17 Setting point w/out aux. spring 1/min : 290 Contr.-rod trav.mm: 5.5 cm3/: 1.00Dispersion 1000H.: (1.50) Testing: K04

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop Speed 1/min : 315 Contr.-rod trav.mm: (12,6...14,0)

Del.quantity cm3/:1000H.: (32,0...40,0)
Electric current A: 1,8
Control lever at full-load stop 1/min : 2950 Speed

Contr.-rod trav.mm: 0,0...1,0

Electric current short-duration A: 3,0 Starting test

Speed 1/min : 100 Del.quantity cm3/: 55,0 min. 1000H.: -

Remarks:

SETTING OF FBG

-Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.70 (19.2...19.80). Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover

ADJUSTING ACTIVE JOLT DAMPING (ARD)

point (of starting cam).

Control lever at full-load stop. With n= 1000 1/min., I = 2.5 A, control-rodtravel reduction = 2.25...2.55 mm

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MB 3.0 W11 : 07.11.86

Superceeded

Calibrating oil : ISO-4113

: 0 400 076 978 Combination no.

Injection pump

Pump designation : PES6M55C32ORS157-1 EP type number : 0 410 056 991

Governor

Governor design. Governer no. : RSF315/2300M65-12 : 0 420 021 088

Customer-spec. information Customer : DB

Engine : 0M603A

1st version kW : 110.0

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. "C

: 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar : 1.00

Calibrating nozzle-holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant.

per values ____

START OF DELIVERY

Test pressure, bar: 30...32

: 2.20...2.30 Prestroke mm

: (2.15...2.35)

Contr.-rod trav.mm: 20.00...22.00 Cam sequence : 1-5-3-6-2-4

SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00)	Testing: Speed 1/min: 200 C-rod trav.mm min: 7.00 Speed 1/min: 290 C-rod trav.mm : 5.305.50
SD mark cyl. no. : 1	C-rod trav.mm : 2.50 Speed 1/min : 510610 Speed 1/min : 1000
BASIC SETTING	C-rod trav.mm max : 1.80
1st speed 1/mi: 1000	SET IDLE AUXILIARY SPRING Speed 1/min : 360
Contrrod trav.mm: 13.9014.00	Contrrod trav.mm: 4,204,40 : (4,104,50)
Del.quantity cm3/: 5.15.2	TORQUE CONTROL
100H.: (5.05.3)	Torque-control curve - 1st version 1st speed 1/min : 1000
Dispersion cm3/: 0.2	C-rod trav.mm : 13.9014.00 2nd speed 1/min : 1600
100H.: (0.3)	C-rod trav.mm : 13.2013.40 3rd speed 1/min : 2200
2nd speed 1/min: 290.0 ! Contrrod trav. m: 5.35.5 !	C-rod trav.mm : 12.3012.50
Del.quantity cm3/: 0.50.6 100H.: (0.50.9) 1 1 1 1 1 1 1 1 1	compensator (LDA,ADA,ALDA)
100H.: (0.1)	1st version Setting
FULL-LOAD DELIV. AT FULL-LOAD STOP	Speed 1/min: 1000 Pressure hPa: 1600
1st version Speed 1/min: 1000	Contrrod trav.mm: 0.500.90
Charge press. hPa : 1850 Del.quantity cm3/ : 51.052.0 1000H.: (50.053.0)	Measurement Speed 1/min: 1000
Dispersion cm3/: 2.50 1000H.: (3.00)	1st pressure hPa : 1050 C-rod trav.mm : 3.904.10 2nd pressure hPa : 750
HIGHEST RATED SPEED 1 1st version 1	C-rod trav.mm : 5.806.20
Control-lever	FUEL-DELIVERY CHARACTERISTICS
3rd c-rod trav.mm: 8,108,50 Speed 1/min: 2500 4th speed 1/min: 2950	1st version Charge press. hPa : 1850 Speed 1/min : 1600
C-rod trav.mm : 0.001.00	Del.quantity cm3/: 50.051.5 1000H.: (49.052.5)
SET IDLE CONTROL-LEVER POSITION	Dispersion cm3/: 2.50 1000H.: (3.00)
Speed 1/min: 1000 Contrrod trav.mm: 1,71,8	Charge press. hPa : 1850 Speed 1/min : 2200 Del.quantity cm3/ : 48_550.5
LOWEST RATED SPEED I Control-lever position degrees: 812	1000H.: (47.551.5) Dispersion cm3/: 2.50 1000H.: 3.00
Setting point w/out aux. spring Speed 1/min : 290	Charge press. hPa : 1050 Speed 1/min : 1000
Contrrod trav.mm: 5.4	Del.quantity cm3/: 33.034.0 1000H.: (32.035.0)

cm3/: 2.50 1000H.: 3.00 Dispersion

STARTING FUEL DELIVERY

Speed 1/min: 100
Del.quantity cm3/: 52.0...0.0
1000H.: (52.0...0.0)
Contr.-rod trav.mm: 20.10...0.00

HIGH IDLE

1st version

Charge press. hPa: 1850 1/min: 2500 Speed

Contr.-rod trav.mm: 8.10...8.50 Del.quantity cm3/: 29.0...33.0 1000H:: (28.0...34.0)

cm3/: 2.50Dispersion

1000H.: (3.00)

LOW IDLE

1/min : 290 Speed

Contr.-rod trav.mm: 5.30...5.50 Del.quantity cm3/: 5.5...6.5 1000H.: (5.0...9.5)

cm3/: 1.00Dispersion

1000H.: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)

Control lever at idle stop Speed 1/min : 315

Contr.-rod trav.mm: (12,8...14,2)

Del.quantity cm3/: -

1000H.: (42,0...49,0)

Electric current A: 1,8

Control lever at full-load stop

1/min : 2950 Speed

Contr.-rod trav.mm: (0,0...1,0)

Electric current

short-duration A: 3,0

Starting test

1/min : 100

Del.quantity cm3/: - min. 1000H.: 52,0

Remarks:

SETTING OF FBG

-Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.70 (19.2...19.8°).

Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 45.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

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BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                    SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00)
Test sheet
                   : MB 3,0 W12
                   : 07.11.86
Edition
Superceeded
                                                    SD mark cyl. no. : 1
Calibrating oil
                  : ISO-4113
                                                   BASIC SETTING
Combination no.
                   : 0 400 076 979
                                                                  1/mi: 1000
                                                    1st speed
Injection pump
Pump designation : PES6M55C32ORS157-1
                                                    Contr.-rod trav.mm: 13.90...14.00
EP type number
                   : 0 410 056 991
                                                    Del.quantity cm3/ : 5.1...5.2
Governor
Governor design. : RSF315/2300M65-10
                                                                 100H.: (5.0...5.3)
Governer no.
                   : 0 420 021 087
Customer-spec. information
                                                   Dispersion
                                                                 cm3/:0.2
Customer
                   : DB
                                                                 100H.: (0.3)
Engine
                   : OM603A Touring
                                                                 1/min: 290.0
                                                   2nd speed
1st version kW
                   : 110.0
                                                   Contr.-rod trav. m: 5.3...5.5
                                                   Del.quantity cm3/: 0.5...0.6
                                                                 100H.: (0.5...0.9)
TEST BENCH REQUIREMENTS
                                                   Dispersion
                                                                 cm3/:0.1
Calibrating-oil inlet temp. °C
                                                                 100H.: (0.1)
                   : 38...42
                                                   FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                   : 1 469 990 351
                                                    1st version
                                                                 1/min: 1000
                                                    Speed
                                                   Charge press. hPa: 1850
Inlet press., bar : 1.00
                                                   Del.quantity cm3/: 51.0...52.0
1000H.: (50.0...53.0)
Calibrating nozzle-holder
                                                                cm3/ : 2.50
1000H.: (3.00)
            : 0 681 343 009
assembly
                                                   Dispersion
Opening.
pressure, bar : 172...175
                                                   HIGHEST RATED SPEED
                                                   1st version
                                                   Control-lever
Test in i. tubing : 1 680 750 014
                                                    position degrees: 50...0
                                                   3rd c-rod trav.mm : 8,10...8,50
Speed 1/min : 2500
Outside diameter
x Wall thickness
                                                                1/min: 2950
                                                    4th speed
                   : 6.00x2.00x600
                                                      C-rod trav.mm : 0.00...1.00
x Length mm
                                                   SET IDLE CONTROL-LEVER
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                   POSITION
                                                                1/min : 1000
                                                   Speed
                                                   Contr.-rod trav.mm: 1,7...1,8
    per values ____
START OF DELIVERY
                                                   LOWEST RATED SPEED I
Test pressure, bar: 30...32
                                                   Control-lever
                                                    position degrees: 8...12
                                                   Setting point w/out aux. spring
                   : 2.20...2.30
Prestroke mm
                   : (2.15...2.35)
                                                   Speed
                                                               1/min : 290
Contr.-rod trav.mm: 20.00...22.00
                                                   Contr.-rod trav.mm: 5.4
Cam sequence : 1- 5- 3- 6- 2- 4
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cm3/: 2.50Testing: Dispersion Speed 1/min : 200 1000H.: 3.00 C-rod trav.mm min : 7.00 Speed 1/min : 290 C-rod trav.mm : 5.30...5.50 STARTING FUEL DELIVERY C-rod trav.mm : 2.50 1/min : 510...610 1/min : 1000 Speed Speed Speed 1/min : 100 Del.quantity cm3/: 52.0...0.0 1000H.: (52.0...0.0) Contr.-rod trav.mm: 20.10...0.00 C-rod trav.mm max: 1.80 SET IDLE AUXILIARY SPRING 1/min : 360 Contr.-rod trav.mm: 4,20...4,40 HIGH IDLE : (4,10...4,50) 1st version TORQUE CONTROL Charge press. hPa: 1850 Torque-control curve - 1st version 1/min : 2500 Speed Contr.-rod trav.mm: 8.10...8.50
Del.quantity cm3/: 29.0...33.0
1000H.: (28.0...34.0)
Dispersion cm3/: 2.50 1/min : 1000 ev.mm : 13.90...14.00 1st speed C-rod trav.mm 2nd speed 1/min : 1600 : 13.20...13.40 C-rod trav.mm 1000Ha: (3.00) 1/min : 2200 3rd speed C-rod trav.mm : 12.30...12.50 LOW IDLE compensator (LDA, ADA, ALDA) 1/min : 290 Speed Contr.-rod trav.mm: 5.30...5.50
Del.quantity cm3/: 5.5...6.5
1000H.: (5.0...9.5)
Dispersion cm3/: 1.00 1st version Setting 1/min : 1000 Speed hPa : 1600 1000H.: (1.50) Pressure Contr.-rod trav.mm: 0.50...0.90 SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Measurement Speed 1/min : 1000 Control lever at idle stop 1/min : 315 1st pressure hPa : 1050 Speed 2nd pressure hPa : 750 C-rod tray Contr.-rod trav.mm: (12,8...14,2) Del.quantity cm3/:-1000H.: (42,0...49,0) Electric current A: 1,8 FUEL-DELIVERY CHARACTERISTICS Control lever at full-load stop 1/min : 2950 Speed Contr.-rod trav.mm: (0,0...1,0) 1st version Charge press. hPa : 1850 Electric current 1/min : 1600 short-duration A: 3.0 Speed Del.quantity cm3/: 50.0...51.5 1000H.: (49.0...52.5) Starting test 1/min : 100 cm3/: 2.50Del.quantity cm3/: -Dispersion 1000H.: (3.00) 1000H.: 52,0 min. Charge press. hPa : 1850 1/min : 2200 Remarks: Speed Del.quantity cm3/: 48.5...50.5 1000H.: (47.5...51.5) Dispersion cm3/: 2.50 1000H.: 3.00 SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Charge press. hPa : 1050 Cam angle according to cyl. 1. 1/min : 1000 Speed Del.quantity cm3/ : 33.0...34.0 1000H.: (32.0...35.0) K10

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                     SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00)
                    : MB 3.0 W14
: 07.11.86
Test sheet
Edition
Superceeded
                                                      SD mark cyl. no. : 1
                   : ISO-4113
Calibrating oil
                                                      BASIC SETTING
Combination no.
                    : 0 400 076 982
                                                      1st speed
                                                                     1/mi: 1000
Injection pump
Pump designation : PES6M55C32ORS156
                                                      Contr.-rod trav.mm: 11.30...11.40
EP type number
                    : 0 410 056 995
                                                     Del.quantity cm3/: 3.1...3.2
Governor
Governor design. : RSF315/2300M60-14
                                                                    100H.: (3.0...3.3)
Governer no.
                   : 0 420 021 080
Customer-spec. information
                                                      Dispersion
                                                                    cm3/:0.2
Customer
                   : DB
                                                                    100H.: (0.3)
                    : OM603-3.0
Engine
                                                                    1/min: 290.0
                                                      2nd speed
                                                     Contr.-rod trav. m: 5.4...5.6
Del.quantity cm3/: 0.5...0.6
100H.: (0.5...0.9)
1st version kW
                   : 80.0
TEST BENCH REQUIREMENTS
                                                                    cm3/: 0.1
                                                      Dispersion
Calibrating-oil inlet temp. OC
                                                                    100H.: (0.1)
                    : 38...42
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                    : 1 469 990 351
                                                     1st version
                                                                    1/min: 1000
                                                      Speed
                                                     Del.quantity cm3/: 31.5...32.5
Inlet press., bar : 1.00
                                                                  1000H.: (30.5...33.5) cm3/ : 2.50
Calibrating nozzle-holder
                                                     Dispersion
                                                                   1000H.: (3.00)
            : 0 681 343 009
 assembly
                                                     HIGHEST RATED SPEED
Opening
 pressure, bar : 172...175
                                                     1st version
                                                     Control-lever
                                                     position degrees: 50...0
3rd c-rod trav.mm: 7,80...8,20
Test inj. tubing
                   : 1 680 750 014
                                                                  1/min : 2500
                                                        Speed
                                                        th speed 1/min : 2950
C-rod trav.mm : 0.00...1.00
Outside diameter
                                                      4th speed
x Wall thickness
x Length mm
                    : 6.00x2.00x600
                                                     SET IDLE CONTROL-LEVER
(A) Injection pump setting values
                                                     POSITION
    Insp. values in parentheses
Set constant delivery quant.
                                                                  1/min : 1000
                                                     Speed
                                                     Contr.-rod trav.mm: 0,9...1,0
    per values ____
                                                     LOWEST RATED SPEED I
START OF DELIVERY
                                                     Control-lever
Test pressure, bar: 30...32
                                                      position degrees: 13...17
                                                     Setting point w/out aux. spring
                                                                  1/min : 290
                    : 2.00...2.10
Prestroke mm
                                                     Contr.-rod trav.mm: 5.5
                    : (1.95...2.15)
Contr.-rod trav.mm: 20.00...22.00
Cam sequence : 1-5-3-6-2-4
                                                     Testing:
K12
```

1/min : 220 Speed C-rod trav.mm min: 7.00 Speed 1/min: 290 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) Dispersion cm3/: 2.50 1000H.: (3.00) : 5.40...5.60 C-rod trav.mm C-rod trav.mm : 1.50 1/min : 620...720 Speed 1/min : 1000 Speed C-rod trav.mm max : 1.00 SET IDLE AUXILIARY SPRING LOW IDLE Speed 1/min: 360 Contr.-rod trav.mm: 4,20...4,40 Speed 1/min : 290 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.5...6.5 1000H.: (5.0...9.5) : (4,10...4,50) TORQUE CONTROL cm3/:1.00Torque-control curve - 1st version Dispersion 1000H.: (1.50) 1st speed 1/min : 1000 C-rod trav.mm : 11.30...11.40 2nd speed 1/min : 1800 SETTING/TESTING ELECTRONIC IDLE C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 REGULATION (ELR) C-rod trav.mm : 10.60...10.80 Control lever at idle stop Speed 1/min : 315 compensator (LDA, ADA, ALDA) Contr.-rod trav.mm: (12,6...14,0) Del.quantity cm3/:-1000H.: (32,0...40,0) Electric current A: 1,8 1st version Setting Control lever at full-load stop 1/min : 2950 1/min: 1000 Speed Speed hPa : 930 Contr.-rod trav.mm: (0,0...1,0) Pressure Contr.-rod trav.mm: 0.10...0.50 Electric current short-duration A: 3,0 Measurement Starting test 1/min : 100 1/min : 1000 Speed Speed Del.quantity cm3/: -min. 1000H.: 55,0 1st pressure hPa : 840 C-rod trav.mm : 1.10...1.30 2nd pressure hPa : 700 C-rod trav. Remarks: C-rod trav.mm : 2.30...2.70 SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 34.0...35.5 1000H.: (33.0...36.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 33.5...35.5 Cam angle according to cyl. 1. Start-of-delivery spacing (difference) between max/min value 10 cam angle 1000H.: (32.5...36.5) cm3/ : 2.50 Dispersion 1000H.: 3.00 maximum. STARTING FUEL DELIVERY CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. Speed 1/min : 100 Del.quantity cm3/: 55.0...0.0 1000H.: (55.0...0.0) At n = 290 1/min and pu = 450 mbar control rod must move briskly to Contr.-rod trav.mm: 20.10...0.00 control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.

Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                         SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00)
Test sheet
                     : MB 3.0 W15
: 14.11.86
Superceeded
                                                         SD mark cyl. no. : 1
Calibrating oil : ISO-4113
                                                         BASIC SETTING
Combination no.
                     : 0 400 076 983
                                                                         1/mi: 1000
                                                         1st speed
Injection pump
Pump designation : PES6M55C32ORS150
                                                         Contr.-rod trav.mm: 11.30...11.40
EP type number : 0 410 056 995
                                                         Del.quantity cm3/: 3.1...3.2
Governor
Governor design.
                     : RSF315/2300M59-15
Governer no.
                     : 0 420 021 075
                                                                        100H.: (3.0...3.3)
Customer-spec. information
                                                                        cm3/ : 5.2
                                                         Dispersion
Customer
                    : DB
                                                                        100H.: (0.3)
Engine
                     : 0M603-3.0
                                                         2nd speed 1/min: 290.0
Contr.-rod trav. m: 5.4...5.6
Del.quantity cm3/: 0.5...0.6
100H.: (0.5...0.9)
1st version kW
                     : 80.0
TEST BENCH REQUIREMENTS
                                                                        cm3/:0.1
                                                         Dispersion
Calibrating-oil inlet temp. OC
                                                                        100H.: (0.1)
                     : 38...42
                                                         FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                     : 1 469 990 351
                                                         1st version
                                                         Speed 1/min: 1000
Del.quantity cm3/: 31.5...32.5
1000H: (30.5...33.5)
Dispersion cm3/: 2.50
Inlet press., bar: 1.00
Calibrating nozzle-holder
 assembly
               : 0 681 343 009
                                                                       1000H .: (3.00)
                                                         HIGHEST RATED SPEED
Opening
 pressure, bar : 172...175
                                                         1st version
                                                         Control-lever
                                                         position degrees: 0...50
3rd c-rod trav.mm: 7.80...8.20
Speed 1/min: 2500
4th speed 1/min: 2950
Test inj. tubing : 1 680 750 014
Outside diameter
x Wall thickness
                                                           C-rod trav.mm : 0.00...1.00
              : 6.00x2.00x600
x Length mm
                                                         SET IDLE CONTROL-LEVER
                                                         POSITION
(A) Injection pump setting values
     Insp. values in parentheses
                                                                       1/min : 1000
                                                         Speed
    Set constant delivery quant.
                                                         Contr.-rod trav.mm: 0,9...1,0
    per values
                                                         LOWEST RATED SPEED I
START OF DELIVERY
                                                         Control-lever
Test pressure, bar: 30...32
                                                          position degrees: 13...17
                                                         Setting point w/out aux. spring
                     : 2.00...2.10
: (1.95...2.15)
Prestroke mm
                                                         Speed
                                                                 1/min : 290
                                                         Contra-rod trav.mm: 5.5
Contr.-rod trav.mm: 20.00...22.00
Cam sequence : 1-5- 3- 6- 2- 4
                                                         Testing:
```

Speed 1/min : 220 C-rod trav.mm min : 7.00 1/min : 290 mm : 5.40...5.60 mm : 1.50 Speed C-rod trav.mm C-rod trav.mm Speed 1/min : 620...720 1/min : 1000 Speed C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING 1/min : 360 Speed Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed : 11.30...11.40 C-rod trav.mm 2nd speed 1/min : 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 C-rod trav.mm : 10.60...10.80 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 34.0...35.5 1000H.: (33.0...36.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 33.5...35.5 1000H.: (32.5...36.5) Dispersion cm3/: 2.50 1000H.: 3.00 STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) cm3/: 2.50Dispersion 1000H.: (3.00) LOW IDLE Speed 1/min: 290 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.5...6.5 1000H.: (5.0...9.5) cm3/: 1.00Dispersion 1000H.: (1.50)

K16

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop 1/min : 315 Contr.-rod trav.mm: (12,6...14,0) Del.quantity cm3/:-1000H.: (32,0...40,0) Electric current A: 1,8 Control lever at full-load stop 1/min : 2950 Speed Contr.-rod trav.mm: (0,0...1,0) Electric current short-duration A: 3,0 Starting test 1/min : 100 Speed Del.quantity cm3/:-min. 1000H.: 55,0 Remarks: SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1. Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum. CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar

control rod must move briskly to control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                     SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00)
Test sheet
                   : MB 3,0 W16
Edition
                   : 07.11.86
Superceeded
                                                     SD mark cyl. no. : 1
Calibrating oil : ISO-4113
                                                     BASIC SETTING
Combination no.
                   : 0 400 076 984
                                                     1st speed
                                                                    1/mi: 1000
Injection pump
Pump designation : PES6M55C32ORS156
                                                     Contr.-rod trav.mm: 11.30...11.40
EP type number
                 : 0 410 056 995
                                                     Del.quantity cm3/: 3.1...3.2
Governor
Governor design. : RSF315/2300M59-13
Governer no.
                  : 0 420 021 073
                                                                   100H.: (3.0...3.3)
Customer-spec. information
                                                     Dispersion
                                                                   cm3/:0.2
Customer
                   : DB
                                                                   100H.: (0.3)
Engine
                   : 0M603-3.0
                                                    2nd speed 1/min: 290.0
Contr.-rod trav. m: 5.4...5.6
Del.quantity cm3/: 0.5...0.6
                   : 80.0
1st version kW
TEST BENCH REQUIREMENTS
                                                                   100H.: (0.5...0.9)
                                                                   cm3/:0.1
                                                     Dispersion
                                                                   100H.: (0.1)
Calibrating-oil inlet temp. OC
                   : 38...42
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                    : 1 469 990 351
                                                     1st version
                                                                   1/min: 1000
                                                     Speed
                                                    Del.quantity cm3/: 31.5...32.5
1000H:: (30.5...33.5)
Dispersion cm3/: 2.50
Inlet press., bar: 1.00
Calibrating nozzle-holder
              : 0 681 343 009
                                                                  1000H.: (3.00)
 assembly
Opening
                                                    HIGHEST RATED SPEED
 pressure, bar : 172...175
                                                     1st version
                                                     Control-lever
                                                     position degrees: 50...0
3rd c-rod trav.mm: 7,80...8,20
Test inj. tubing : 1 680 750 014
                                                                 1/min : 2500
                                                       Speed
Outside diameter
                                                     4th speed
                                                                 1/min : 2950
x Wall thickness
                                                       C-rod trav.mm : 0.00...1.00
x Length mm
                   : 6.00x2.00x600
                                                    SET IDLE CONTROL-LEVER
(A) Injection pump setting values
                                                    POSITION
    Insp. values in parentheses
                                                                 1/min : 1000
                                                    Speed
    Set constant delivery quant.
                                                     Contr.-rod trav.mm: 0,9...1,0
    per values ____
                                                    LOWEST RATED SPEED I
START OF DELIVERY
                                                    Control-lever
                                                     position degrees: 13...17
Test pressure, bar: 30...32
                                                    Setting point w/out aux. spring
Prestroke mm
                   : 2.00...2.10
                                                               1/min : 290
                                                    Contr.-rod trav.mm: 5.5
                   : (1.95...2.15)
Contr.-rod trav.mm: 20.00...22.00
                   : 1-5-3-6-2-4
Cam sequence
                                                    Testing:
K17
```

1/min : 220 Speed C-rod trav.mm min: 7.00 1/min : 290 Speed C-rod trav.mm : 5.40...5.60 C-rod trav.mm : 1.50 Speed 1/min : 620...720 1/min: 1000 Speed C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING 1/min : 360 Speed Contr.-rod trav.mm: 4,20...4,40 (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 11.30...11.40 2nd speed 1/min : 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 C-rod trav.mm : 10.60...10.80 FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 1800 Del.quantity cm3/: 34.0...35.5 1000H: (33.0...36.5) cm3/: 2.50 1000H: (3.00) 1/min: 2200 Dispersion Speed Del.quantity cm3/: 33.5...35.5 1000H:: (32.5...36.5) Dispersion cm3/: 2.50 1000H:: 3.00 STARTING FUEL DELIVERY HIGH IDLE 1/min: 2500 Speed Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H:: (21.0...27.0) Dispersion cm3/: 2.50 1000H:: (3.00) LOW IDLE 1/min : 290 Speed Contr.-rod trav.mm: 5.40...5.60
Del.quantity cm3/: 5.5...6.5
1000H.: (5.0...9.5)
Dispersion cm3/: 1.00 1000H.: (1.50)

SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) Control lever at idle stop 1/min : 315 Speed Contr.-rod trav.mm: (12,6...14,0) Del.quantity cm3/:-1000H.: (32,0...40,0) Electric current A: 1,8 Control lever at full-load stop 1/min : 2950 Speed Contr.-rod trav.mm: (0.0...1.0) Electric current short-duration A: 3.0 Starting test 1/min : 100 Speed Del.quantity cm3/: -min. 1000H.: 55,0 Remarks: SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.70 (19.2...19.80). Cam angle according to cyl. 1. Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum. CHECKING THE PNEUMATIC SHUTOFF BOX -Control lever up against idle stop. At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.50,

control-rod travel deduction must be

greater than 0.2 mm after switchover

point (of starting cam).

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00) Test sheet : MB 3,0 W17 : 12.09.86 Edition Superceeded SD mark cyl. no. : 1 Calibrating oil : ISO-4113 BASIC SETTING Combination no. : 0 400 076 985 1/mi: 1000 1st speed Injection pump Pump designation : PES6M55C32ORS157-1 Contr.-rod trav.mm: 13.90...14.00 EP type number : 0 410 056 991 Del.quantity cm3/ : 5.1...5.2 Governor Governor design.: RSF315/2300M65-2 Governer no. 100H.: (5.0...5.3) : 0 420 021 062 Customer-spec. information Dispersion cm3/:0.2Customer : DB 100H.: (0.3) Engine : 0M603A 2nd speed 1/min: 290.0 Contr.-rod trav. m: 5.3...5.5 Del.quantity cm3/: 0.5...0.6 100H.: (0.5...0.9) 1st version kW : 110.0 TEST BENCH REQUIREMENTS Dispersion cm3/:0.1Calibrating-oil inlet temp. °C 100H.: (0.1) : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Overflow valve : 1 469 990 351 1st version Speed 1/min: 1000 Charge press. hPa : 1850 Inlet press., bar : 1.00 Del.quantity cm3/: 51.0...52.0 1000H: (50.0...53.0) Dispersion cm3/: 2.50 1000H: (3.00) Calibrating nozzle-holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 HIGHEST RATED SPEED 1st version Control-lever Test inj. tubing : 1 680 750 014 position degrees: 50...0 3rd c-rod trav.mm: 8,10...8,50 Speed 1/min: 2500 4th speed 1/min: 2950 Outside diameter x Wall thickness : 6.00X2.00X600 : 0.00...1,00 C-rod trav.mm x Length mm SET IDLE CONTROL-LEVER (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. POSITION Speed 1/min : 1000 per values Contr.-rod trav.mm: 1,7...1,8 START OF DELIVERY LOWEST RATED SPEED I Test pressure, bar: 30...32 Control-lever position degrees: 8...12 Setting point w/out aux. spring : 2.20...2.30 Prestroke mm : (2.15...2.35) Speed 1/min : 290 Contr.-rod trav.mm: 20.00...22.00 Contr.-rod trav.mm: 5.4 Cam sequence : 1-5-3-6-2-4

Testing: Dispersion cm3/: 2.501/min : 200 1000H.: 3.00 Speed C-rod trav.mm min: 7.00 1/min : 360 Speed C-rod trav.mm : 4.20...4.40 STARTING FUEL DELIVERY C-rod trav.mm : 2.50 1/min : 510...610 Speed 1/min: 1000 1/min : 100 Speed Speed Contr.-rod trav.mm: 20.10...0.00 C-rod trav.mm max: 1.80 SET IDLE AUXILIARY SPRING HIGH IDLE 1/min : 360 Contr.-rod trav.mm: 4,20...4,40 1st version Charge press. hPa : 1850 : (4,10...4,50) 1/min: 2500 Speed TORQUE CONTROL Contr.-rod trav.mm: 8.10...8.50 Del.quantity cm3/: 29.0...33.0 1000H.: (28.0...34.0) Dispersion cm3/: 2.50 1000H.: (3.00) Torque-control curve - 1st version 1/min : 1000 ist speed : 13.90...14.00 C-rod trav.mm 1/min : 1600 2nd speed : 13.20...13.40 C-rod trav.mm 3rd speed 1/min : 2200 LOW IDLE C-rod trav.mm : 12.30...12.50 1/min : 290 Speed compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 1000 Speed SETTING/TESTING ELECTRONIC IDLE hPa : 1600 Pressure Contr.-rod trav.mm: 0.50...0.90 REGULATION (ELR) Control lever at idle stop Measurement 1/min : 315 1/min : 1000 Speed Speed Contr.-rod trav.mm: (12,8...14,2) Del.quantity cm3/:-1st pressure hPa : 1050 1000H.: (42,0...49,0) Electric current A: 1,8 : 3.90...4.10 C-rod trav.mm 2nd pressure hPa : 750 Control lever at full-load stop : 5.80...6.20 C-rod trav.mm 1/min : 2950 Speed FUEL-DELIVERY CHARACTERISTICS Contr.-rod trav.mm: (0,0...1,0) Electric current short-duration A: 3,0 1st version Charge press. hPa: 1850 Starting test 1/min: 1600 1/min : 100 Del.quantity cm3/: 50.0...51.5 Delmquantity cm3/: -1000H.: 52,0 1000H.: (49.0...52.5) min. cm3/: 2.50Dispersion Remarks: 1000H.: (3.00) Charge press. hPa: 1850 SETTING OF FBG Speed 1/min : 2200 -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Del.quantity cm3/: 48.5...50.5 1000H.: (47.5...51.5) cm3/: 2.50 1000H.: 3.00 Cam angle according to cyl. 1. Dispersion Charge press. hPa: 1050 1/min : 1000 Speed Del.quantity cm3/: 33.0...34.0 1000H.: (32.0...35.0)

Start-of-delivery spacing (difference) between max/min value 10 cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                       SD ang. spacing CS: 0-60-120-180-240-300 Tolerance 4 - : 0.00 (1.00)
                    : MB 3.0 W5 : 12.09.86
Test sheet
Edition
                                                       SD mark cyl. no. : 1
                    : 04.86
Superceeded
                   : ISO-4113
Calibrating oil
                                                       BASIC SETTING
                    : 0 400 076 988
Combination no.
                                                       1st speed
                                                                      1/mi: 1000
Injection pump
Pump designation : PES6M55C32ORS156
                                                       Contr.-rod trav.mm: 11.30...11.40
                    : 0 410 056 995
EP type number
                                                       Del.quantity cm3/: 3.1...3.2
Governor
Governor design.
                    : RSF315/2300M60-4
                                                                     100H.: (3.0...3.3)
Governer no.
                    : 0 420 021 057
                                                                     cm3/:0.2
Customer-spec. information
                                                       Dispersion
Customer
                                                                     100H.: (0.3)
                    : 0M603-3.0
Engine
                                                      2nd speed 1/min: 290.0
Contr.-rod trav. m: 5.4...5.6
Del.quantity cm3/: 0.5...0.6
100H.: (0.5...0.9)
                    : 80.0
1st version kW
TEST BENCH REQUIREMENTS
                                                                     cm3/:0.1
                                                       Dispersion
Calibrating-oil inlet temp. OC
                                                                     100H .: (0.1)
                    : 38...42
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                    : 1 469 990 351
                                                       1st version
                                                       Speed 1/min: 1000
Del.quantity cm3/: 31.5...32.5
Inlet press. bar: 1.00
                                                                    1000H.: (30.5...33.5)
cm3/ : 2.50
Calibrating nozzle-holder
                                                       Dispersion
            : 0 681 343 009
                                                                    1000H.: (3.00)
 assembly
Opening
                                                       HIGHEST RATED SPEED
 pressure, bar : 172...175
                                                       1st version
                                                       Control-lever
                                                       position degrees: 50...0

3rd c-rod trav.mm: 7,80...8,20
                   : 1 680 750 014
Test inj. tubing
                                                                   1/min : 2500
                                                         Speed
                                                                    1/min : 2950
Outside diameter
                                                       4th speed
x Wall thickness
                                                         C-rod trav.mm : 0.00...1.00
                    : 6.00x2.00x600
x Length mm
                                                       SET IDLE CONTROL-LEVER
(A) Injection pump setting values
                                                       POSITION
    Insp. values in parentheses
Set constant delivery quant.
                                                       Speed
                                                                    1/min : 1000
                                                       Contr.-rod trav.mm: 0,9...1,0
    per values ____
                                                       LOWEST RATED SPEED I
                                                       Control-lever
START OF DELIVERY
Test pressure, bar: 30...32
                                                       position degrees: 13...17
                                                       Setting point w/out aux. spring Speed 1/min: 290
                    : 2.00...2.10
Prestroke mm
                    : (1.95...2.15)
                                                       Contr.-rod trav.mm: 5.5
Contr.-rod trav.mm: 20.00...22.00
                   : 1-5-3-6-2-4
                                                       Testing:
Cam sequence
```

Speed 1/min : 220 1/min : 2500 C-rod trav.mm min : 7.00 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) Dispersion cm3/: 2.50 1000H.: (3.00) 1/min : 360 Speed C-rod trav.mm : 4.20...4.40 C-rod tray.mm : 1.50 1/min : 620...720 1/min : 1000 Speed Speed C-rod trav.mm max: 1.00 LOW IDLE SET IDLE AUXILIARY SPRING 1/min: 290 Speed Contr.-rod trav.mm: 5.40...5.60 1/min: 360 Speed Del.quantity cm3/: 5.5...6.5 1000H.: (5.0...9.5) Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) cm3/: 1.00 1000H.: (1.50) Dispersion TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min: 1000 C-rod trav.mm: 11.30...11.40 SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1/min : 1800 2nd speed C-rod trav.mm : 10.90...11.10 Control lever at idle stop 3rd speed 1/min : 2200 Speed 1/min : 315 C-rod trav.mm : 10.60...10.80 Contr.-rod trav.mm: (12,6...14,0) Del.quantity cm3/:-1000H:: (32,0...40,0) Electric current A: 1,8 compensator (LDA,ADA,ALDA) Control lever at full-load stop Speed 1/min: 2950 1st version Setting Contr.-rod trav.mm: (0,0...1,0) Electric current 1/min : 1000 Speed : 930 hPa short-duration A: 3.0 Pressure Contr.-rod trav.mm: 0.10...0.50 Starting test 1/min : 100 Speed Del.quantity cm3/:-min. 1000H.: 55,0 Measurement Speed 1/min : 1000 1st pressure hPa : 840 Remarks: C-rod trav.mm : 1.10...1.30 Pin projection = 16.60...16.70 mm 2nd pressure hPa : 700 C-rod trav.mm : 2.30...2.70 FUEL-DELIVERY CHARACTERISTICS FUEL-DELIVERY CHARACTERISTICS

Speed 1/min: 1800

Del.quantity cm3/: 34.0...35.5

1000H.: (33.0...36.5)

Dispersion cm3/: 2.50

1000H.: (3.00)

Speed 1/min: 2200

Del.quantity cm3/: 33.5...35.5

1000H.: (32.5...36.5) SETTING OF FBG -Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). Cam angle according to cyl. 1. cm3/: 2.50Dispersion 1000H.: 3.00 Start-of-delivery spacing (difference) between max/min value 10 cam angle STARTING FUEL DELIVERY maximum. 1/min : 100 Speed Contr.-rod trav.mm: 20.10...0.00 CHECKING THE PNEUMATIC SHUTOFF BOX HIGH IDLE -Control lever up against idle stop. **K23**

At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                          SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00)
Test sheet
Edition
Superceeded
                    : MB 3.0 W1
: 09.03.87
                    : 11.85
                                                          SD mark cyl. no. : 1
Calibrating oil : ISO-4113
                                                          BASIC SETTING
                     : 0 400 076 990
Combination no.
                                                          1st speed
                                                                           1/mi: 1000
Injection pump
                                                          Contr.-rod trav.mm: 11.30...11.40
Pump designation : PES6M55C32ORS156
EP type number : 0 410 056 995
                                                          Del.quantity cm3/: 3.1...3.2
Governor
Governor design. : RSF315/2300M59-5
Governer no. : 0 420 021 045
                                                                          100%; (3.0...3.3)
                                                                          cm3/:0.2
Customer-spec. information
                                                          Dispersion
Customer
                                                                          100H.: (0.3)
Engine
                     : 0M603-3.0
                                                                          1/min: 290
                                                          2nd speed
                                                          Contr.-rod trav. m: 5.4...5.6

Del.quantity cm3/: 0.5...0.6

100H.: (0.5...0.9)

Dispersion cm3/: 0.1

100H.: (0.1)
1st version kW
                     : 80.0
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. OC
                      : 38...42
                                                          FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                      : 1 469 990 351
                                                          1st version
                                                          Speed 1/min: 1000
Del.quantity cm3/: 31.5...32.5
1000H.: (30.5...33.5)
Dispersion cm3/: 2.50
1000H.: (3.00)
Inlet press., bar : 1.00
Calibrating nozzle-holder
                     : 0 68i 343 009
 assembly
                                                          HIGHEST RATED SPEED
Opening
pressure, bar : 172...175
                                                          1st version
                                                          Control-lever
                                                          position degrees: 0...50
3rd c-rod trav.mm: 7.80...8,20
Speed 1/min: 2500
4th speed 1/min: 2950
Test inj. tubing : 1 680 750 014
Outside diameter
                                                            C-rod trav.mm : 0.00...1.00
x Wall thickness
x Length mm
                     : 6.00X2.00X600
                                                          SET IDLE CONTROL-LEVER
                                                          POSITION
(A) Injection pump setting values
     Insp. values in parentheses
                                                                        1/min : 1000
                                                          Speed
                                                          Contr.-rod trav.mm: 0,9...1.0
     Set constant delivery quant.
    per values ____
                                                          LOWEST RATED SPEED I
                                                          Control-lever
START OF DELIVERY
                                                           position degrees: 13...17
Test pressure, bar: 30...32
                                                          Setting point w/out aux. spring
                                                                       1/min : 290
Prestroke mm
                     : 2.00...2.10
                     : (1.95...2.15)
                                                          Contr.-rod trav.mm: 5.5
Contr.-rod trav.mm: 20.00...22.00
Cam sequence : 1-5-3-6-2-4
                                                          Testing:
```

Speed 1/min: 220 C-rod trav.mm min: 7.00 SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR) 1/min : 290 Speed : 5.40...5.60 C-rod trav.mm : 1.50 C-rod trav.mm Control lever at idle stop 1/min : 620...720 Speed 1/min : 315 Speed Contr.-rod trav.mm: (12,6...14,0) 1/min : 1000 Del.quantity cm3/:1000H:: (32,0...40,0)
Electric current A: 1,8
Control lever at full-load stop C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING Speed 1/min : 360 Contr.-rod trav.mm: 4,20...4,40 1/min : 2950 Speed : (4,10...4,50) Contr.-rod trav.mm: (0,0...1,0) Electric current TORQUE CONTROL short-duration A: 3,0 Torque-control curve - 1st version Starting test 1st speed 1/min : 1000 1/min : 100 Speed Del.quantity cm3/: -min. 1000H.: 55,0 C-rod trav.mm : 11.30...11.40 2nd speed 1/min: 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 Remarks: C-rod trav.mm : 10.60...10.80 SETTING OF FBG -Setting and locking of FBG according FUEL-DELIVERY CHARACTERISTICS to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°). 1/min: 1800 Speed Del.quantity cm3/: 34.0...35.5 1000H: (33.0...36.5) Dispersion cm3/: 2.50 1000H: (3.00) Cam angle according to cyl. 1. 1/min : 2200 Speed Del.quantity cm3/: 33.5...35.5 1000H.: (32.5...36.5) Start-of-delivery spacing (difference) between max/min value 1° cam angle cm3/: 2.50Dispersion 1000H.: 3.00 maximum. STARTING FUEL DELIVERY CHECKING THE PNEUMATIC SHUTOFF BOX 1/min : 100 -Control lever up against idle stop. Speed Del.quantity cm3/: 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 At n = 290 1/min and pu = 450 mbar control rod must move briskly to control-rod travel = 0 mm HIGH IDLE Speed 1/min : 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 CHECKING THE IDLE-SPEED AUXILIARY 1000H.: (21.0...27.0) cm3/: 2.50 1000H.: (3.00) SPRING CUTOFF -Control-lever position 49°, max.
0.2 mm control-rod travel deduction Dispersion allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be LOW IDLE 1/min : 290 Speed greater than 0.2 mm after switchover point (of starting cam).

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                     SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.00 (1.00)
Test sheet
                    : MB 3.0 W
: 09.03.87
Edition
Superceeded
                   : 11.85
                                                     SD mark cyl. no. : 1
Calibrating oil : ISO-4113
                                                     BASIC SETTING
                   : 0 400 076 994
Combination no.
                                                     1st speed
                                                                   1/mi: 1000
Injection pump
Pump designation : PES6M55C32ORS156
                                                     Contr.-rod trav.mm: 11.30...11.40
EP type number
                   : 0 410 056 995
                                                     Del.quantity cm3/: 3.1...3.2
Governor
Governor design.: RSF315/2300M59-3
Governer no.
                                                                    100H.: (3.0...3.3)
                   : 0 420 021 040
                                                                   cm3/:0.2
Customer-spec. information
                                                     Dispersion
Customer
                   : DB
                                                                    100H.: (0.3)
                    : 0M603-3.0
Engine
                                                     2nd speed
                                                                    1/min: 290
                                                     Contr.-rod trav. m: 5.4...5.6
1st version kW
                   : 80.0
                                                     Del.quantity cm3/: 0.5...0.6
TEST BENCH REQUIREMENTS
                                                                    100H.: (0.5...0.9)
                                                                    cm3/:0.1
                                                     Dispersion
                                                                    100H.: (0.1)
Calibrating-oil inlet temp. °C
                    : 38...42
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
Overflow valve
                    : 1 469 990 351
                                                     1st version
                                                                    1/min: 1000
                                                     Speed
                                                     Del.quantity cm3/: 31.5...32.5
Inlet press., bar : 1.00
                                                     1000H.: (30.5...33.5)
Dispersion cm3/: 2.50
1000H.: (3.00)
Calibrating nozzle-holder
              : 0 681 343 009
 assembly
                                                     HIGHEST RATED SPEED
Opening
 pressure, bar : 172...175
                                                     1st version
                                                     Control-lever
                                                     position degrees: 50...0
3rd c-rod trav.mm: 7,80...8,20
Test inj. tubing : 1 680 750 014
                                                                  1/min : 2500
                                                       Speed
                                                     4th speed 1/min: 2950
C-rod trav.mm: 0.00...1.00
Outside diameter
x Wall thickness
                   : 6.00X2.00X600
x Length mm
                                                     SET IDLE CONTROL-LEVER
                                                     POSITION
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                                  1/min : 1000
                                                     Contr.-rod trav.mm: 0,9...1,0
    per values
                                                     LOWEST RATED SPEED I
START OF DELIVERY
                                                     Control-lever
                                                      position degrees: 13...17
Test pressure, bar: 30...32
                                                     Setting point w/out aux. spring
                    : 2.00...2.10
                                                               1/min : 290
Prestroke mm
                                                     Contr.-rod trav.mm: 5.5
                    : (1.95...2.15)
Contr.-rod trav.mm: 20.00...22.00
Cam sequence : 1-5- 3- 6- 2- 4
                                                     Testing:
K27
```

Speed 1/min: 220 C-rod trav.mm min: 7.00 Speed 1/min: 290 : 5.40...5.60 C-rod trav.mm : 1.50 C-rod trav.mm 1/min : 620...720 Speed 1/min : 1000 Speed C-rod trav.mm max: 1.00 SET IDLE AUXILIARY SPRING Speed 1/min: 360 Contr.-rod trav.mm: 4,20...4,40 : (4,10...4,50) TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1000 C-rod trav.mm : 11.30...11.40 2nd speed 1/min: 1800 C-rod trav.mm : 10.90...11.10 3rd speed 1/min : 2200 C-rod trav.mm : 10.60...10.80 FUEL-DELIVERY CHARACTERISTICS 1/min : 1800 Speed Del.quantity cm3/: 34.0...35.5 1000H.: (33.0...36.5) Dispersion cm3/: 2.50 1000H.: (3.00) Speed 1/min: 2200 Del.quantity cm3/: 33.5...35.5 1000H.: (32.5...36.5) cm3/: 2.50 Dispersion 1000H.: 3.00 STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/ : 55.0...0.0 1000H.: (55.0...0.0) Contr.-rod trav.mm: 20.10...0.00 HIGH IDLE Speed 1/min: 2500 Contr.-rod trav.mm: 7.80...8.20 Del.quantity cm3/: 22.0...26.0 1000H.: (21.0...27.0) cm3/ : 2.50 Dispersion 1000H.: (3.00) LOW IDLE Speed 1/min: 290 Contr.-rod trav.mm: 5.40...5.60 Del.quantity cm3/: 5.5...6.5 1000H.: (5.0...9.5) cm3/: 1.00 1000H.: (1.50) Dispersion

SETTING/TESTING ELECTRONIC IDLE
REGULATION (ELR)

Control lever at idle stop
Speed 1/min: 315
Control trav.mm: (12,6...14,0)
Del.quantity cm3/:1000H.: (32,0...40,0)
Electric current A: 1,8
Control lever at full-load stop
Speed 1/min: 2950
Control rav.mm: (0,0...1,0)
Electric current
short-duration A: 3,0
Starting test
Speed 1/min: 100
Del.quantity cm3/:min. 1000H.: 55,0

Remarks:
SETTING OF FBG
-Setting and locking of FBG according to start-of-delivery average of all cylinders 19.3...19.7° (19.2...19.8°).
Cam angle according to cyl. 1.

Start-of-delivery spacing (difference) between max/min value 1° cam angle maximum.

CHECKING THE PNEUMATIC SHUTOFF BOX
-Control lever up against idle stop.
At n = 290 1/min and pu = 450 mbar
control rod must move briskly to
control-rod travel = 0 mm

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF
-Control-lever position 49°, max.
0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min.
Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

```
: 1-6-5-4-3-2
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                            Cam sequence
Note inst. in remarks column
Test sheet
                                                            SD ang. spacing CS: 0-75-120-195-240-315
Tolerance + - : 0.50 (0.75)
                     : KHD 9,6 N 1
: 12.09.86
Edition
Superceeded
Superceeded : 10.85
Calibrating oil : ISO-4113
                                                            SD mark cyl. no. : 1
Combination no. : 0 400 646 266
                                                            BASIC SETTING
                                                                             1/mi: 1150
Injection pump
                                                            1st speed
Pump designation : PE6A95D410LS2587
EP type number : 0 410 696 983
                                                            Contr.-rod trav.mm: 8.30...8.40
Governor
Governor design. : RQV300...1150AB1088L
                                                           Del.quantity cm3/ : 7.2...7.4
                    : 0 420 212 115
Governer no.
                                                                           100H.: (7.0...7.6)
Customer-spec. information
                                                                           cm3/: 0.3
Customer
                      : KHD
                                                            Dispersion
Engine
                      : F6L413
                                                                            100H.: (0.6)
                                                           2nd speed 1/min: 300.0
Contr.-rod trav. m: 5.9...6.1
Del.quantity cm3/: 0.9...1.5
100H.: (0.6...1.7)
Dispersion cm3/: 0.3
100H.: (0.5)
1st version kW : 115.0
               1/min: 2300
Speed
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                      : 38...42
                                                            (B) Setting of injection pump with
                                                                externally-mounted governor
Overflow valve
                      : 1 417 413 000
                                                            SLEEVE TRAVELS
                                                            1st speed 1/min: 300
Sleeve travel mm: 1.20...1.30
Inlet press., bar : 1.00
                                                           2nd speed 1/min: 400
Calibrating nozzle-holder
                                                              Sleeve travel mm: 2.30...2.70
 assembly
                     : 0 681 343 009
                                                            3rd speed
                                                                          1/min: 600
                                                           Sleeve travel mm: 3.00...3.50
4th speed 1/min: 1195
Sleeve travel mm: 8.40...8.50
5th speed 1/min: 1235
Sleeve travel mm: 8.90...9.10
Opening
 pressure, bar : 172...175
Test inj. tubing : 1 680 750 014
                                                           SLEEVE POSITION
Outside diameter
x Wall thickness
                                                           Control-lever position
                    : 6.00x2.00x600
x Length mm
                                                                          Degree: -1
                                                                           17min: 1190
                                                           Speed
                                                           Cont.-rod travelmm: 15.20...$ .80
(A) Injection pump setting values
     Insp. values in parentheses
Set constant delivery quant.
                                                           FULL-LOAD DELIV. AT FULL-LOAD STOP
    per values ____
                                                           1st version
START OF DELIVERY
                                                                           1/min: 1150
                                                           Speed
                                                           Del.quantity cm3/: 72.0...74.0
1090H.: (70.0...76.0)
Dispersion cm3/: 3.50
1000H.: (6.00)
Test pressure, bar: 25...27
Prestroke mm
                      : 1.50...1.60
                      : (1.45...1.65)
Contr.-rod trav.mm: 9.00...12.00
```

L01

HIGHEST RATED SPEED 1st version Control-lever position degrees: 61...69 Testing: 1st c-rod trav.mm: 7.30 Speed 1/min: 1190...1200 2nd c-rod trav.mm : 4.00 1/min : 1220...1250 4th speed 1/min : 1350 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 68...76 Testing: Speed 1/min : 100 C-rod trav.mm min: 8.00 Speed 1/min: 300 C-rod trav.mm : 6.40...6.60 CONSTANT REGULATION 1/min : 320...420 Speed TORQUE CONTROL Dimension a mm : 1.00 Torque-control curve - 1st version 1st speed 1/min : 1150 C-rod trav.mm : 8.30...8.40 2nd speed 1/min: 500 C-rod trav.mm : 9.30...9.40 3rd speed 1/min : 935 C-rod trav.mm : 9.00...9.20 4th speed 1/min : 1045 C-rod trav.mm : 8.50...8.70 SWITCH-OVER POINT 1/min : 220 (240) Speed FUEL-DELIVERY CHARACTERISTICS 1/min : 800 Speed Del.quantity cm3/: 78.0...81.0 1000H.: (75.5...83.5) 1/min : 800 Speed Del.quantity cm3/ : 93.5...101.5 1000H.: (96-)...104.0) STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 120.0...130.0 1000H.: (117.0...133.0) Contr.-rod trav.mm: 14.40...14.80

On activation of the starting solenoid,

L02

the start position must be reached.

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

When accelerating from engine speed "O", no voltage in starting solenoid. APPLICATION Below-ground operation

```
: 1- 8- 7- 2- 6- 5-
4- 3
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                       Cam sequence
Note inst. in remarks column
Test sheet
                    : KHD 12,7 N1
                    : 12.09.86
                                                       SD ang. spacing CS: 0-45-90-135-180-225-
Edition
Superceeded
                    : 10.85
                                                                             270-315
                                                       Tolerance + - 0
Calibrating oil : ISO-4113
                                                                           : 0.50 (0.75)
Combination no.
                    : 0 400 648 124
                                                       SD mark cyl. no. : 1
                                                       BASIC SETTING
Injection pump
Pump designation : PE8A95D410LS2588
EP type number : 0 410 698 989
                                                       1st speed
                                                                      1/mi: 1150
Governor
Governor design. : RQV300...1150AB1088
                                                       Contr.-rod trav.mm: 9.30...9.40
Governer no.
                    : 0 420 212 115
                                                       Del.quantity cm3/: 7.1...7.3
Customer-spec. information
Customer
                                                                     100H.: (6.9...7.5)
                    : KHD
Engine
                    : F8L413FW
                                                       Dispersion
                                                                     cm3/:0.3
1st version kW : 153.0
                                                                     100H.: (0.6)
              1/min: 2300
Speed
                                                                     1/min: 300.0
                                                       2nd speed
TEST BENCH REQUIREMENTS
                                                       Contr.-rod trav. m: 6.2...6.4
                                                      Del.quantity cm3/: 1.4...2.0
100H.: (1.1...2.2)
Dispersion cm3/: 0.3
100H.: (0.5)
Calibrating-oil inlet temp. °C
                    : 38...42
Overflow valve
                    : 1 417 413 000
                                                       (B) Setting of injection pump with
                                                           externally-mounted governor
Inlet press., bar: 1.00
                                                       SLEEVE TRAVELS
                                                      1st speed 1/min: 300
Sleeve travel mm: 1.20...1.30
2nd speed 1/min: 400
Sleeve travel mm: 2.20...2.60
Calibrating nozzle-holder
                 : 0 681 343 009
 assembly
Opening
                                                       3rd speed 1/min: 600
 pressure, bar : 172...175
                                                         Sleeve travel mm: 3.00...3.50
                                                       4th speed 1/min: 1195
                                                      Steeve travel mm: 8.50...8.50
5th speed 1/min: 1245
Steeve travel mm: 9.10...9.30
Test inj. tubing : 1 680 750 014
Outside diameter
x Wall thickness
                  : 6.00x2.00x600
                                                       SLEEVE POSITION
x Length mm
                                                       Control-lever position
                                                                    Degree: -1
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                      Speed
                                                                     17min: 1200
                                                      Cont.-rod travelmm: 15.20...17.80
    per values ____
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
START OF DELIVERY
Test pressure, bar: 25...27
                                                      1st version
                                                                     1/min: 1150
                                                      Speed
                                                      Del.quantity cm3/: 71.0...73.0
Prestroke mm
                    : 1.50...1.6C
                                                                    1000H.: (69.0...75.0)
                    : (1.45...1.65)
Contr.-rod trav.mm: 9.00...12.00
L03
```

Dispersion cm3/ : 3.50 1000H.: (6.00) HIGHEST RATED SPEED 1st version Control-lever position degrees: 61...69 Testing: 1st c-rod trav.mm : 8.30 Speed 1/min: 1190...1200 2nd c-rod trav.mm : 4.00 1/min : 1230...1260 1/min : 1350 Speed 4th speed C-rod trav.mm : 0.001.00 LOWEST RATED SPEED I Control-lever position degrees: 8...16 Testing: 1/min : 100 Speed C-rod trav.mm min : 7.80 Speed 1/min : 300 C-rod trav.mm : 6.20...6.40 CONSTANT REGULATION 1/min: 320...430 Speed TORQUE CONTROL Dimension a mm : 1.00 Torque-control curve - 1st version 1st speed 1/min : 1150 C-rod trav.mm : 9.30...9.40 2nd speed 1/min: 500 C-rod trav.mm \$ 10.30...10.40 3rd speed 1/min : 935 C-rod trav.mm : 10.00...10.20 4th speed 1/min: 1045 C-rod trav.mm : 9.50...9.70 SWITCH-OVER DINT 1/min : 220 (240) Speed FUEL-DELIVERY CHARACTERISTICS 1/min : 800 Speed Del.quantity cm3/: 77.5...80.5 1000H.: (75.0...83.0) Speed 1/min: 800 Del.quantity cm3/: 98.5...101.5 1000H.: (96.0...104.0) STARTING FUEL DELIVERY

1/min : 100

Del.quantity cm3/: 120.0...130.0 1000H.: (117.0...133.0) Contr.-rod trav.mm: 15.40...15.80

Speed

L04

On activation of the starting solenoid, the start position must be reached.

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

When accelerating from engine speed "O", no voltage in starting solenoid. APPLICATION Below-ground operation

```
: 1- 8- 7- 2- 6- 5-
4- 3
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                     Cam sequence
Note inst. in remarks column
                    : KHD 12,7 P4
Test sheet
Edition
                    : 15.05.87
                                                     SD ang. spacing CS: 0-45-90-135-180-225-
                                                                           270-315
Superceeded
                                                     Tolerance + - 0
                                                                         : 0.50 (0.75)
Calibrating oil : ISO-4113
Combination no.
                    : 0 400 648 145
                                                     SD mark cyl. no. : 1
Injection pump
                                                     BASIC SETTING
Pump designation : PE8A95D410LS2608
EP type number : 0 410 698 988
                                                     1st speed
                                                                     1/mi: 1100
Governor
Governor design. : RQ300/1100AB1230L
                                                     Contr.-rod trav.mm: 10.00...10.10
Governer no.
                  : 0 420 200 108
                                                     Del.quantity cm3/: 8.9...9.1
Customer-spec. information
Customer
                   : KHD
                                                                    100H.: (8.7...9.3)
                                                                   cm3/:0.3
Engine
                   : F8L413F
                                                     Dispersion
1st version kW : 162.0
                                                                    100H.: (0.6)
              1/min: 2200
Speed
                                                                   1/min: 300.0
                                                     2nd speed
                                                     Contr.-rod trav. m: 6.4...6.6
TEST BENCH REQUIREMENTS
                                                     Del.quantity cm3/: 1.0...1.6
100H.: (0.7...1.8)
Dispersion cm3/: 0.5
100H.: (0.7)
Calibrating-oil inlet temp. OC
                    : 38...42
Overflow valve
                    : 1 417 413 000
                                                     SLEEVE POSITION
                                                     Control-lever position
Inlet press., bar : 1.00
                                                                  Degree: -1
                                                                   17min: 550
                                                     Speed
Calibrating nozzle-holder
                                                     Cont.-rod travelmm: 15.60...16.40
                   : 0 681 343 009
 assembly
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening.
 pressure, bar : 172...175
                                                     1st version
                                                                   1/min: 1100
                                                     Speed
                                                     Del.quantity cm3/: 89.0...91.0
1000H.: (87.0...93.0)
Dispersion cm3/: 3.50
Test inj. tubing : 1 680 750 014
                                                                  1000H.: (6.00)
Outside diameter
x Wall thickness
                                                     HIGHEST RATED SPEED
               : 6.00x2.00x600
x Length mm
                                                     Setting point:
(A) Injection pump setting values
    Insp. values in parentheses
                                                     Speed .
                                                                 1/min : 550
    Set constant delivery quant.
                                                     Contr.-rod trav.mm: 16.0
    per values ____
                                                     Testing:
                                                     1st c-rod trav.mm : 9.00
Speed 1/min : 1145...1160
2nd c-rod trav.mm : 4.00
START OF DELIVERY
Test pressure, bar: 25...27
                                                                  1/min : 1205...1235
Prestroke mm
                    : 2.00...2.10
                                                       Speed
                    : (1.95...2.15)
Contr.-rod trav.mm: 9.00...12.00
                                                     LOWEST RATED SPEED I
L05
```

```
Setting point w/out aux. spring
Speed 1/min : 300
Contr.-rod trav.mm: 6.5
Testing:
            1/min : 100
Speed
C-rod trav.mm min: 8.00
           1/min : 300
Speed
               : 6.40...6.60
: 2.00
C-rod trav.mm
C-rod trav.mm
           1/min: 355...395
Speed
TORQUE CONTROL
Dimension a mm : 0.25
Torque-control curve - 1st version
1st speed 1/min : 1100
  C-rod trav.mm : 10.00...10.10
2nd speed 1/min: 550
C-rod trav.mm : 10.50...10.60
3rd speed 1/min : 785
 C-rod trav.mm : 10.30...10.50
4th speed 1/min: 915
  C-rod trav.mm : 10.10...10.30
FUEL-DELIVERY CHARACTERISTICS
Speed 1/min : 650
Del.quantity cm3/: 90.5...93.5
            1000H.: (88.0...96.0)
STARTING FUEL DELIVERY
            1/min : 100
Speed
Del.quantity cm3/: 120.0...130.0
            1000H.: (117.0...133.0)
Contr.-rod trav.mm: 14.70...15.70
         Remarks: 1
```

BOSCH INJ. PUMP TEST SPECIFICATIONS Contr.-rod trav.mm: 9.00...12.00 : 1-10- 9- 4- 3- 6-5- 8- 7- 2 Cam sequence Note inst. in remarks column Test sheet : KHD 15.8 N1 : 15.05.87 Superceeded SD ang. spacing CS: 0-27-72-99-144-171-: 10.85 Calibrating oil : ISO-4113 216-243-288-315 Tolerance + - 0 : 0.50 (0.75) Combination no. : 0 400 649 219 SD mark cyl. no. : 1 Injection pump Pump designation : PE10A95D610/4LS2589 BASIC SETTING EP type number : 0 410 699 994 1/mi: 1150 Governor 1st speed : RQV300...1150AB1047D Governor design. Contr.-rod trav.mm: 9.30...9.40 Governer no. : 0 420 214 242 Del.quantity cm3/: 6.9...7.1 Customer-spec. information 100H.: (6.7...7.3) Customer : F10L413 cm3/:0.3Engine Dispersion 1st version kW : 192.0 100H.: (0.6) 1/min: 2300 Speed 2nd speed 1/min: 300.0 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 (B) Setting of injection pump with externally-mounted governor Inlet press., bar: 1.00 SLEEVE TRAVELS 1st speed 1/min: 300 Sleeve travel mm: 1.20...1.30 2nd speed 1/min: 400 Calibrating nozzle-holder : 0 681 343 009 assembly Sleeve travel mm: 2.20...2.60 Opening pressure, bar : 172...175 1/min: 600 3rd speed Sleeve travel mm: 3.00...3.50 4th speed 1/min: 1195 Sleeve travel mm: 8.40...8.50 Test ini. tubing : 1 680 750 014 5th speed 1/min: 1235 Sleeve travel mm: 9.10...9.30 Outside diameter x Wall thickness : 6.00x2.00x600 SLEEVE POSITION x Length mm Control-lever position (A) Injection pump setting values Degree: -1 Insp. values in parentheses Set constant delivery quant. 17min: 1190 Speed Cont.-rod travelmm: 15.20...17.80 per values ____ FULL-LOAD DELIV. AT FULL-LOAD STOP START OF DELIVERY Test pressure, bar: 25...27 1st version 1/min: 1150 Speed : 1.50...1.60 Del.quantity cm3/: 69.0...71.0 Prestroke mm 1000H.: (67.0...73.0) : (1.45...1.65)

L07

```
Dispersion cm3/ : 3.50
              1000H.: (6.00)
HIGHEST RATED SPEED
1st version
Control-lever
 position degrees: 61...69
Testing:
1st c-rod trav.mm : 8.30
  Speed 1/min: 1190...1200
2nd c-rod trav.mm: 4.00
             1/min : 1230...1260
1/min : 1350
  Speed
4th speed
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Control-lever
 position degrees: 10...18
Testing:
Speed 1/min: 100
C-rod trav.mm min: 7.80
Speed 1/min: 300
C-rod trav.mm: 7.20...7.40
CONSTANT REGULATION
Speed
             1/min : 320...430
TORQUE CONTROL
Dimension a mm : 1.00
Torque-control curve - 1st version
1st speed 1/min: 1150
  C-rod trav.mm : 9.30...9.40
2nd speed 1/min: 500
 C-rod trav.mm : 10.30...10.40
3rd speed 1/min: 935
C-rod trav.mm : 10.00...10.20
4th speed 1/min : 1045
  C-rod trav.mm : 9.50...9.70
SWITCH-OVER POINT
Speed
             1/min : 220 (240)
FUEL-DELIVERY CHARACTERISTICS
Speed 1/min: 800
Del.quantity cm3/: 75.5...78.5
1000H: (73.0...81.0)
Speed 1/min: 800
Del.quantity cm3/: 98.5...101.5
             1000H.: (96.0...104.0)
STARTING FUEL DELIVERY
             1/min : 100
Speed
Del.quantity cm3/: 120.0...130.0
             1000H.: (117.0...133.0)
Contr.-rod trav.mm: 15.40...15.80
```

L08

Remarks: On activation of the starting solenoid, the start position must be reached.

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                       SD ang. spacing CS: 0-60-120-180-249-300 Tolerance + - : 0.50 (0.75)
Test sheet
Edition
Superceeded
                   : STE 6,0 H 6
                   : 12.09.86
                   : 10.84
                                                       BASIC SETTING
Calibrating oil : ISO-4113
                                                       1st speed
                                                                      1/mi: 1400
                   : 0 400 656 159
Combination no.
                                                       Contr.-rod trav.mm: 14.20...14.30
Injection pump
Pump designation : PE6A85D412RS2303Y
                                                       Del.quantity cm3/ : 9.6...9.7
EP type number : 0 410 686 940
                                                                      100H.: (9.4...9.9)
Governor
Governor design. : RQV250...1400AB879DL
                                                                     cm3/:0.3
Governer no.
                   : 0 420 214 186
                                                       Dispersion
                                                                      100H.: (0.4)
Customer-spec. information
Customer
                   : STEYR
                                                      2nd speed 1/min: 250.0
Contr.-rod trav. m: 8.9...9.1
Del.quantity cm3/: 1.0...1.5
100H.: (0.8...1.7)
Engine
                    : WD612.90
1st version kW
                  : 154.0
                                                                     cm3/:0.2
                                                       Dispersion
                                                                      100H.: (0.4)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. OC
                                                       SLEEVE POSITION
                    : 38...42
                                                       Control-lever position
                                                                    Degree: -1
1/min: 1450
Overflow valve
                    : 1 417 413 000
                                                       Cont.-rod travelmm: 15.20...17.80
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
Inlet press., bar: 1.00
Calibrating nozzle-holder
                                                       1st version
                                                      Speed 1/min: 1400
Charge press. hPa: 700
Del.quantity cm3/: 96.0...97.0
1000H.: (94.0...99.0)
Dispersion cm3/: 3.00
             : 0 681 343 009
 assembly
Opening
pressure, bar : 172...175
                                                                    1000H.: (4.50)
Test inj. tubing : 1 680 750 014
                                                       HIGHEST RATED SPEED
Outside diameter
                                                       1st version
                                                       Control-lever
x Wall thickness
                   : 6.00x2.00x600
x Length mm
                                                        position degrees: 43...51
(A) Injection pump setting values
                                                       Testing:
    Insp. values in parentheses
                                                       1st c-rod trav.mm : 13.20
    Set constant delivery quant.
                                                         Speed 1/min: 1440...1450
                                                       2nd c-rod trav.mm : 4.00
    per values ____
                                                       Speed 1/min: 1580...1610
3rd c-rod trav.mm: 0.00...1.00
START OF DELIVERY
                                                         Speed 1/min: 1700
Test pressure, bar: 25...27
                    : 2.50...2.60
                                                       LOWEST RATED SPEED I
Prestroke mm
                    : (2.45...2.65)
                                                       Control-lever
Contr.-rod trav.mm: 9.00...12.00
                                                       position degrees: 9...17
Cam sequence : 1-5-3-6-2-4
```

L09

```
Testing:
             1/min : 100
Speed
C-red trav.mm min: 10.40
C-rod trav.mm
                    : 2.00
             1/min : 380...440
1/min : 500
Speed
Speed
C-rod trav.mm max: 1.00
CONSTANT REGULATION
Speed
             1/min : 340...450
 compensator (LDA_ADA_ALDA)
1st version
Setting
              1/min : 1400
Speed
             hPa : 700
Pressure
Contr.-rod trav.mm: 14.20...14.30
Measurement
             1/min : 1400
Speed
1st pressure hPa : -
                    : 12.50...12.60
  C-rod trav.mm
2nd pressure hPa : 240
                    : 13.80...13.90
  C-rod trav.mm
3rd pressure hPa : 220
  C-rod trav.mm
                    : 12.90...13.10
SWITCH-OVER POINT
             1/min: 170 (190)
Speed
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa: 700
             1/min: 800
Speed
Del.quantity cm3/: 91.5...94.5
1000H.: (89.5...96.5)
Dispersion cm3/: 4.00
1000H.: (5.50)
Charge press, hPa : -
              1/min : 500
Speed
Del.quantity cm3/: 60.5...63.5
1000H.: (58.5...65.5)
             cm3/: 4.00
1000H.: 5.50
Dispersion
```

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS SD ang. spacing CS: 0-90-180-270 Tolerance + - : 0.50 (0.75) Note inst. in remarks column Test sheet : HAN 7,2 B 1 : 13.05.87 Edition SD mark cyl. no. : 1 Superceeded : ISO-4113 BASIC SETTING Calibrating oil Combination no. : 0 400 674 045 1/mi: 1080 1st speed Contr.-rod trav.mm: 11.00...11.10 Injection pump Pump designation : PE4A9SD42ORS2662-1 Del.quantity cm3/: 10.6...10.8 EP type number : 0 10 694 994 Governor 100H.: (10.4...11.0) Governor design. : RSV350...1100A8C2222 : 0 420 232 487 cm3/:0.3Governer no. Dispersion 100H.: (0.6) Customer-spec. information Customer : HANOMAG 2nd speed 1/min: 350.0 Contr.-rod trav. m: 7.4...7.6 Del.quantity cm3/: 3.2...3.8 100H.: (2.9...4.0) : D944 T Engine 1st version kW : 93.0 cm3/: 0.3 100H.: (0.5) 1/min: 2200 Speed Dispersion TEST BENCH REQUIREMENTS SLEEVE POSITION Control-lever position Calibrating-oil inlet temp. C : 38...42 Degree: -3 17min: 800 Speed Cont.-rod travelmm: 0.30...0.70 Inlet press., bar : 1.00 Governor-spring reload Notch setting x : 3.75 Calibrating nozzle-holder : 0 681 343 009 assembly FULL-LOAD DELIV. AT FULL-LOAD STOP Opening pressure, bar : 172...175 1st version 1/min: 1080 Speed Del.quantity cm3/: 106.0...108.0 Test inj. tubing : 1 680 750 003 1000H.: (104.0...110.0) cm3/ : 3.50 1000H.: (6.00) Outside diameter Dispersion x Wall thickness : 6.00x2.00x600 x Length mm HIGHEST RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set constant delivery quant. Control-lever position degrees: 44...52 per values ____ Testing: 1st c-rod trav.mm : 10.00 Speed 1/min : 1120...1130 START OF DELIVERY Test pressure, bar: 25...27 2nd c-rod trav.mm : 4.00 Speed 1/min: 1140...1175 3rd c-rod trav.mm: 4.00 : 2.15...2.25 Prestroke mm : (2.10...2.30) 1/min : 1165...1195 Contr.-rod trav.mm: 9.00...12.00 Speed Cam sequence : 1- 2- 4- 3 1/min : 1340 4th speed C-rod trav.mm : 0.30...1.40

```
LOWEST RATED SPEED I
Control-lever
position degrees: 13...21
Setting point w/out aux. spring
Speed 1/min: 350
Contr.-rod trav.mm: 7.0
Testing:
            1/min : 100
Speed
C-rod trav.mm min: 19.50
            1/min : 350
Speed
C-rod trav.mm : 7.40...7.60
C-rod trav.mm : 2.00
C-rod trav.mm
                  : 2.00
            1/min : 490...550
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min : 1080
  C-rod trav.mm : 11.00...11.10
2nd speed 1/min: 500
 C-rod trav.mm : 11.90...12.00
4th speed 1/min: 670
  C-rod trav.mm : 11.40...11.70
FUEL-DELIVERY CHARACTERISTICS
            1/min : 500
Speed
Del.quantity cm3/: 109.0...112.0
             1000H.: (106.5...114.5)
STARTING FUEL DELIVERY
            1/min : 100
Speed
Del.quantity cm3/: 132.0...142.0
            1000H.: (129.0...145.0)
Contr.-rod trav.mm: 19.50...21.00
```

Cam sequence : 1- 3- 4- 2 BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : LIE 5.6 B Edition : 13.05.87 Superceeded : 12.9.86 SD ang. spacing 0 CS: 0-90-180-270 Tolerance + - 0 : 0.50 (0.75) Calibrating oil : ISO-4113 START OF DELIVERY DIFFERENCE betw.c-rod trav.mm: 9.00...12.00 Difference CS : 4.00...5.00 Combination no. : 0 400 844 085 Injection pump Pump designation : PES4A100D410RS2686 BASIC SETTING EP type number : 0 410 804 001 1/mi: 1000 Governor 1st speed Governor design. : RQV400...1000AB1203L Governer no. : 0 420 212 177 Contr.-rod trav.mm: 12.50...12.60 Del.guantity cm3/: 12.1...12.3 Customer-spec. information Customer : LIEBHERR 100H.: (11.9...12.5) : D904T Engine cm3/:0.3Dispersion 1st version kW : 100.0 Speed 1/min: 2000 100H.: (0.6) 2nd speed 1/min: 400.0 Contr.-rod trav. m: 7.4...7.6 Del.quantity cm3/: 1.5...2.1 100H.: (1.2...2.3) Dispersion cm3/: 0.3 100H.: (0.5) TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. C : 40...45 Overflow valve : 1 417 413 000 (B) Setting of injection pump with externally-mounted governor Inlet press., bar: 1.50 Calibrating nozzle-holder SLEEVE TRAVELS : 0 681 343 009 1st speed 1/min: 450 assembly Sleeve travel mm: 4.20...4.40
2nd speed 1/min: 580
Sleeve travel mm: 3.60...3.90
3rd speed 1/min: 1040
Sleeve travel mm: 7.80...7.90 Opening pressure, bar : 172...175 4th speed 1/min: 1140 Test inj. tubing : 1 680 750 008 Sleeve travel mm: 9.00...9.20 Outside diameter x Wall thickness SLEEVE POSITION : 6.00x2.00x600 Control-lever position x Length mm Degree: 1 Speed 1/min: 1000 Cont.-rod travelmm: 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. FULL-LOAD DELIV. AT FULL-LOAD STOP per values ____ START OF DELIVERY 1st version Speed 1/min: 1000 Charge press. hPa: 800 Del.quantity cm3/: 121.5...123.5 1000H.: (119.5...125.5) Test pressure, bar: 25...27 : 2.70...2.80 Prestroke mm : (2.65...2.85) Contr.-rod trav.mm: 9.00...12.00

L13

Dispersion cm3/ : 3.50 1000H.: (6.00) HIGHEST RATED SPEED 1st version Control-lever position degrees: 58...66 Testing: 1st c-rod trav.mm: 11.50 1/min : 1040...1050 Speed 2nd c-rod trav.mm: 4.00 1/min : 1125...1155 Speed 3rd c-rod trav.mm : 4.00 4th speed 1/min: 1250 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 9...17 Testing: 1/min : 100 Speed C-rod trav.mm min: 8.50 Speed 1/min : 400 : 6.90...7.10 C-rod trav.mm CONSTANT REGULATION 1/min : 435...540 Speed TORQUE CONTROL Dimension a mm : 1.30 Torque-control curve - 1st version 1/min : 1000 1st speed C-rod trav.mm : 12.50...12.60 2nd speed 1/min: 500 C-rod trav.mm : 13.80...13.90 4th speed 1/min: 860 : 13.30...13.50 C-rod trav.mm 1/min : 920 5th speed : 12.90...13.10 C-rod trav.mm compensator (LDA, ADA, ALDA) 1st version Setting Speed 1/min : 500 hPa : 800 Pressure Contr.-rod trav.mm: 13.80...13.90 Measurement 1/min : 500 Speed 1st pressure hPa : -: 12.70...12.80 C-rod trav.mm 2nd pressure hPa : 655 : 13.60...13.70 C-rod trav.mm 3rd pressure hPa : 610 C-rod trav.mm : 13.00...13.20

SWITCH-OVER POINT 1/min : 320 (340) Speed FUEL-DELIVERY CHARACTERISTICS Charge press. hPa: 800 Speed 1/min : 650 Del.quantity cm3/: 133.5...136.5 1000H.: (131.0...139.0) Charge press. hPa : -1/min: 500 Speed Del.quantity cm3/: 104.0...107.0 1000H.: (102.0...109.0) STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 113.0...123.0 1000H.: (110.0...126.0) Contr.-rod trav.mm: 19.50...21.00 LOW IDLE 1/min : 400 Speed Contr.-rod trav.mm: 7.40...7.60 Del.quantity cm3/: 15.0...21.0 1000H.: (12.5...23.5) Dispersion cm3/: 3.50 1000H.: (5.50)

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet : MAN 9,2 0 3
Edition : 30.03.87
Superceeded : 12.9.86
Calibrating oil : ISO-4113

Combination no. : 0 400 845 072

Injection pump

Pump designation : PES5A95D410LS2543 EP type number : 0 410 895 978

Governor

Governor design. : RQV250...1100AB1177-

1L

Governer no. : 0 420 212 163

Customer-spec. information Customer

: D2565 M/MF Engine

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Calibrating nozzle-holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test in j. tubing : 1 680 750 003

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant.

per values ____

START OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60

: (1.45...1.65)

Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 3- 5- 4-

Testing: 1st c-rod trav.mm : 10.00 Speed 1/min : 1140...1150 2nd c-rod trav.mm : 4.00 SD ang. spacing⁰CS: 0-72-144-216-288 Tolerance + - : 0.50 (0.75) Speed 1/min: 1180...1210 4th speed 1/min: 1300 SD mark cyl. no. :5 C-rod trav.mm : 0.00...1.00 BASIC SETTING LOWEST RATED SPEED I 1/mi: 1100 1st speed Control-lever Contr.-rod trav.mm: 11.00...11.10 position degrees: 8...16 Del.quantity cm3/: 11.0...11.2 Testing: Speed 1/min : 100 100H.: (10.8...11.4) C-rod trav.mm min : 8.10 Speed 1/min : 250 C-rod trav.mm : 6.50...6.70 C-rod trav.mm : 2.00 cm3/:0.3Dispersion 100H.: (0.6) 1/min : 335...395 Speed TORQUE CONTROL 1/min: 250.0 2nd speed Contr.-rod trav. m: 6.5...6.7 Dimension a mm : 0.35 Del.quantity cm3/: 0.8...1.4 100H.: (0.5...1.6) Dispersion cm3/: 0.3 100H.: (0.5) Torque-control curve - 1st version 1st speed 1/min : 1100 C-rod trav.mm : 11.00...11.10 2nd speed 1/min: 500 C-rod trav.mm : 11.40...11.50 4th speed 1/min : 900 (B) Setting of injection pump with C-rod trav.mm : 11.10...11.40 externally-mounted governor SLEEVE TRAVELS SWITCH-OVER POINT 1/min : 170 (190) 1st speed 1/min: 150 Speed Sleeve travel mm: 0.40...0.70
2nd speed 1/min: 550
Sleeve travel mm: 3.60...4.00
3rd speed 1/min: 900
Sleeve travel mm: 5.60...6.10 FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 500
Del.quantity cm3/: 0.0...111.5
1000H: (0.0...113.5)
Speed 1/min: 750 4th speed 1/min: 1200 Sleeve travel mm: 9.50...10.30 Del.quantity cm3/: 106.5...110.5 1000H.: (104.5...112.5) SLEEVE POSITION Control-lever position Degree: -1 1/min: 1140 STARTING FUEL DELIVERY Speed * } } } } } Cont.-rod travelmm: 15.20...17.80 $1/\min : 100$ Speed Del.quantity cm3/: 146.5...156.5 1000H.: (143.5...159.5) FULL-LOAD DELIV. AT FULL-LOAD STOP Contr.-rod trav.mm: 16.90...17.50 1st version Speed 1/min: 1100
Del.quantity cm3/: 110.5...112.5
1000H.: (108.5...114.5)
Dispersion cm3/: 3.50 Remarks: Set idle stop at 250 min. -1 control-rod travel of 6.5 mm to a 1000H.: (6.00) HIGHEST RATED SPEED 1st version Control-lever

position degrees: 42...50

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                          : 1-5-3-6-2-4
                                                      Cam sequence
Note inst. in remarks column
Test sheet
                                                      SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
                    : OMB 8,1 A 1
Edition
                    : 26.06.87
                   : 5.84
: ISO-4113
Superceeded
Calibrating oil
                                                      SD mark cyl. no. : 1
Combination no.
                    : 0 400 846 396
                                                      BASIC SETTING
Injection pump
                                                      1st speed
                                                                      1/mi: 1300
                   : PES6A90D410RS2494
Pump designation
EP type number
                                                      Contr.-rod trav.mm: 13.20...13.30
                   : 0 410 896 057
Governor
Governor design. : RQ275/1300AB969DL
                                                      Del.quantity cm3/: 8.0...8.1
Governer no.
                    : 0 420 202 278
                                                                     100H.: (7.8...8.3)
Customer-spec. information
                    : IVECO-OM
Customer
                                                      Dispersion
                                                                     cm3/:0.3
                    : 8360.05.200
Engine
                                                                     100H.: (0.4)
1st version kW
                  : 117.7
                                                                     1/min: 275.0
                                                      2nd speed
                                                      Contr.-rod trav. m: 8.3...8.5

Del.quantity cm3/: 0.4...0.9

100H.: (0.2...1.1)

Dispersion cm3/: 0.4

100H.: (0.4)
Speed
              1/min: 2600
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. C
                    : 38...42
                                                      SLEEVE POSITION
Overflow valve
                                                      Control-lever position
                    : 1 417 413 000
                                                                   Degree: -1
                                                      Speed
                                                                    17min: 900
                                                      Cont.-rod travelmm: 13.60...15.00
Inlet press., bar : 1.00
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
Calibrating nozzle-holder
                   : 0 681 343 009
 assembly
                                                      1st version
Opening
                                                                    1/min: 1300
                                                      Speed
 pressure, bar
                   : 172...175
                                                      Del.quantity cm3/: 80.0...81.0
                                                                   1000H.: (78.0...83.0) cm3/ : 3.00
                                                      Dispersion
                                                                   1000H.: (4.50)
Test inj. tubing
                   : 1 680 750 014
                                                      HIGHEST RATED SPEED
Outside diameter
x Wall thickness
                   : 6.00x2.00x600
x Length mm
                                                      Setting point:
                                                      Speed 
                                                                  1/min : 900
(A) Injection pump setting values
                                                      Contr.-rod trav.mm: 14.3
    Insp. values in parentheses
Set constant delivery quant.
                                                      Testing:
                                                      1st c-rod trav.mm : 12.20
Speed 1/min : 1345...1360
    per values
                                                      2nd c-rod trav.mm : 4.00
START OF DELIVERY
                                                                   1/min : 1440...1470
Test pressure, bar: 25...27
                                                        Speed
                                                                   1/min : 1600
                                                      4th speed
Prestroke mm
                    : 2.15...2.25
                                                        C-rod trav.mm
                                                                          : 0.00...1.00
                    : (2.10...2.30)
Contr.-rod trav.mm: 9.00...12.00
                                                      LOWEST RATED SPEED I
L17
```

Setting point w/out aux. spring Speed -1/min : 275 Contr.-rod trav.mm: 5.8 Testing: Speed 1/min: 100 C-rod trav.mm min: 7.30 Speed 1/min : 275 C-rod trav.mm : 5.70...5.90 : 2.00 C-rod trav.mm 1/min : 420...480 Speed 1/min : 600 Speed C-rod trav.mm max: 1.00 TORQUE CONTROL Torque-control curve - 1st version 1/min : 1300 1st speed C-rod trav.mm : 13.20...13.30 2nd speed 1/min: 500 C-rod trav.mm : 13.80...13.90 3rd speed 1/min: 700 C-rod trav.mm : 13.70...13.90 FUEL-DELIVERY CHARACTERISTICS 1/min : 500 Speed Del.quantity cm3/: 71.5...74.5 1000H.: (69.0...77.0) 1/min : 700 Speed Del.quantity cm3/: 77.5...80.5 1000H.: (75.0...83.0) STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 112.0...122.0 1000H.: (109.0...125.0) Contr.-rod trav.mm: 19.50...21.00 Remarks: Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 1.50...1.60 : (1.45...1.65) Contr.-rod trav.mm: 9.00...12.00 Note inst. in remarks column Cam sequence : 1-5- 3- 6- 2- 4 Test sheet : MAN 11,1P14 : 12.09.86 : 10.85 Edition Superceeded SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Calibrating oil : ISO-4113 Combination no. : 0 400 846 419 SD mark cyl. no. : 6 Injection pump Pump designation : PES6A95D410LS2542 BASIC SETTING EP type number : 0 410 896 936 1st speed 1/mi: 1100 Governor Governor design. : RQ250/1100AB965DL Governer no. : 0 420 202 270 Contr.-rod trav.mm: 12.00...12.10 Del.quantity cm3/: 12.4...12.6 Customer-spec. information Customer 100H.: (12.2...12.8) Engine : D2566 M/MF Dispersion cm3/:0.31st version kW : 176.5 1/min: 2200 Speed 100H.: (0.6) 2nd version kW : 168.0 2nd speed 1/min: 250.0 Contr.-rod trav. m: 5.9...6.1 Del.quantity cm3/: 0.8...1.4 Speed 1/min: 1500 TEST BENCH REQUIREMENTS 100H.: (0.5...1.6) Calibrating-oil inlet temp. °C cm3/:0.3Dispersion : 38...42 100H.: (0.5) Overflow valve SLEEVE POSITION : 1 417 413 000 Control-lever position Degree: -1 17min: 600 Inlet press., bar : 1.00 Speed Cont.-rod travelmm: 15.60...16.40 Calibrating nozzle-holder assembly : 0 681 343 009 FULL-LOAD DELIV. AT FULL-LOAD STOP Opening 1st version Speed 1/min: 1100
Del.quantity cm3/: 124.5...126.5
1000H.: (122.5...128.5)
Dispersion cm3/: 3.00 pressure, bar : 172...175 Test inj. tubing : 1 680 750 014 1000H.: (6.00) Outside diameter 2nd version x Wall thickness 1/min: 1100 Speed Del.quantity cm2/: 118.0...120.0 * 1000H.: (116.0...122.0) : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. HIGHEST RATED SPEED per values ____ Setting point: 1/min : 600 Speed START OF DELIVERY Contr.-rod trav.mm: 16.0 Test pressure, bar: 25...27 Testing: 1st c-rod trav.mm : 11.00

1/min: 1145...1160 Speed 2nd c-rod trav.mm : 4.00 1/min : 1185...1215 Speed 1/min : 1300 4th speed C-rod trav.mm : 0.00...1.00 Setting point: 1/min : 600 Speed Contr.-rod trav.mm: 16.0 Testing: 1st c-rod trav.mm : 11.00 1/min: 1145...1160 Speed 2nd c-rod trav.mm : 4.00 1/min : 1185...1215 1/min : 1300 Speed 4th speed C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Setting point w/out aux. spring 1/min : 250 Speed Contr.-rod trav.mm: 6.0 Testing: 1/min : 100 Speed C-rod trav.mm min : 7.50 1/min : 250 Speed : 5.90...6.10 C-rod trav.mm : 2.00 C-rod trav.mm 1/min: 360...420 Speed 1/min : 500 Speed C-rod trav.mm max: 1.00 TORQUE CONTROL Torque-control curve - 1st version 1/min : 1100 1st speed C-rod trav.mm : 12.00...12.10 2nd speed 1/min: 500 C-rod trav.mm : 12.00...12.20 FUEL-DELIVERY CHARACTERISTICS 1/min : 500 Speed Del.quantity cm3/: 107.5...113.5 1000H.: (105.0...116.0) 1/min : 750 Speed Del.quantity cm3/: 110.5...113.5 1000H.: (108.0...116.0) 1/min : 500 Speed Del.quantity cm3/: 102.0...108.0 * 1000H.: (100.0...110.0) 1/min: 750 Speed Del.quantity cm3/ : 106.0...109.0 * 1000H.: (104.0...111.0) STARTING FUEL DELIVERY

1/min : 100

Speed

L20

Del.quantity cm3/: 125.0...135.0 1000H.: (122.0...138.0) Contr.-rod trav.mm: 14.00...14.60

Remarks:

: MAN-NR. 2-7283

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : RAB 9,7 B 1 : 13.05.87

Calibrating oil : ISO-4113

Combination no. : 0 400 846 543

Injection pump

Pump designation : PES6A95D420LS2595

EP type number : 0 410 896 930

Governor

Governor design. : RQ200/1100AB1210R

Governer no. : 0 420 201 643

Customer-spec. information Customer : RABA

: D2156MT6U Engine

1st version kW : 188.0 1/min: 2200 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.00

Calibrating nozzle-holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values ____

START OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.05)

Contr.-rod trav.mm: 9.00...12.00

```
Cam sequence : 1-5-3-6-2-4
                                                      Speed 1/min: 100
C-rod trav.mm min: 7.60
                                                 ı
                                                                  1/min : 200
                                                      Speed
                                                      C-rod trav.mm : 6.30...6.50
SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - 0.50 (0.75)
                                                                         : 2.00
                                                      C-rod trav.mm
                                                                  1/min: 320...360
                                                      Speed
                                                                   1/min : 450
                                                      Speed
                                                      C-rod trav.mm max: 1.00
SD mark cyl. no. : 1
BASIC SETTING
                                                      TORQUE CONTROL
                                                      Dimension a mm : 1.20
1st speed 1/mi: 1100
                                                      Torque-control curve - 1st version
                                                      1st speed 1/min: 1100
Contr.-rod trav.mm: 12.60...12.70
                                                        C-rod trav.mm : 12.60...12.70
                                                      2nd speed 1/min: 600
                                                      C-rod trav.mm : 13.80...14.00
3rd speed 1/min : 865
Del.quantity cm3/: 12.6...12.8
                                                      C-rod trav.mm : 13.40...13.70
4th speed 1/min : 985
              100H.: (12.4...13.0)
Dispersion
              cm3/:0.3
                                                        G-rod trav.mm : 13.00...13.20
              100H.: (C.6)
                                                       compensator (LDA, ADA, ALDA)
2nd speed 1/min: 200.0
Contr.-rod trav. m: 7.3...7.5
Del.quantity cm3/: 0.9...1.5
100H.: (0.6...1.7)
                                                      1st version
                                                      Setting
                                                                   1/min : 500
                                                      Speed
              cm3/:0.3
                                                      Pressure
                                                                   hPa : 700
Dispersion
              100H.: (0.5)
                                                      Contr.-rod trav.mm: 13.80...13.90
SLEEVE POSITION
                                                      Measurement
Control-lever position
                                                                   1/min : 500
                                                      Speed
             Degree: -2
1/min: 600
Speed
                                                      1st pressure hPa : -
Cont.-rod travelam: 19.20...20.60
                                                        C-rod trav.mm
                                                                          : 11.10...11.20
                                                      2nd pressure hPa : 340
FULL-LOAD DELIV. AT FULL-LOAD STOP
                                                                          : 12.80...12.90
                                                        C-rod trav.mm
                                                      3rd pressure hPa : 250
1st version
                                                        C-rod trav.mm
                                                                          : 11.20...11.40
Speed 1/min: 1100
Charge press. hPa: 700
Del.quantity cm3/: 126.5...128.5
1000H.: (124.5...130.5)
                                                      FUEL-DELIVERY CHARACTERISTICS
                                                      1st version
Dispersion cm3/ : 3.00
                                                      Charge press. hPa: 700
             1000H.: (6.00)
                                                                   1/min : 700
                                                      Speed
                                                      Del.quantity cm3/: 135.0...138.0
1000H.: (133.0...140.0)
HIGHEST RATED SPEED
                                                      Charge press. hPa : -
                                                                   1/min : 500
Testing:
                                                      Speed
                                                      Del.quantity cm3/: 82.5...84.5
1st c-rod trav.mm : 11.60
  Speed 1/min: 1145...1160
                                                                   1000H.: (80.5...86.5)
2nd c-rod trav.mm : 4.00
           1/min : 1190...1220
  Speed
                                                      STARTING FUEL DELIVERY
LOWEST RATED SPEED I
Setting point w/out aux. spring
            1/min : 200
                                                                   1/min : 100
                                                      Speed
                                                      Del.quantity cm3/: 145.0...155.0
Contr.-rod trav.mm: 6.4
                                                                   1000H.: (142.0...158.0)
                                                      Contr.-rod trav.mm: 17.00...17.40
Testing:
L22
```

Remarks: Check electrically unlatched starting fuel delivery (EES) with 24 volt. Set idle stop at 250 min. -1 to a control-rod travel of 6.5 mm

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                         Contr.-rod trav.mm: 9.00...12.00
                                                         Cam sequence : 1-5-3-6-2-4
Note inst. in remarks column
                     : FIA 5.9 A
: 12.09.86
Test sheet
                                                         SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Edition
Superceeded
                     : ISO-4113
Calibrating oil
                                                         SD mark cyl. no. : 1
                     : 0 400 846 547
Combination no.
                                                         BASIC SETTING
Injection pump
Pump designation : PES6A90D410RS2713
                                                                        1/mi: 1350
                                                         1st speed
EP type number
                     : 0 410 896 083
                                                         Contr.-rod trav.mm: 11:70...11.80
Governor
                     : RQV300...1350AB1175-
Governor design.
                                                         Del.quantity cm3/: 6.8...6.9
                       1L
Governer no.
                     : 0 420 212 183
                                                                        100H.: (6.6...7.1)
Customer-spec. information
Customer
                     : FIAT
                                                         Dispersion
                                                                        cm3/:0.3
                     : 8060.25.661
                                                                        100H.: (0.5)
Engine
1st version kW : 88.0
                                                         2nd speed
                                                                        1/min: 300.0
               1/min: 2700
                                                         Contr.-rod trav. m: 9.7...9.9
Speed
                                                        Del.quantity cm3/: 1.2...1.8
100H.: (1.0...2.0)
Dispersion cm3/: 0.2
100H.: (0.4)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                     : 38...42
                                                         (B) Setting of injection pump with externally-mounted governor
Overflow valve
                     : 1 417 413 000
                                                         SLEEVE TRAVELS
                                                         1st speed 1/min: 300
Inlet press., bar: 1.00
                                                           Sleeve travel mm: 0.90...1.10
                                                        2nd speed 1/min: 435
Sleeve travel mm: 2.40...2.60
3rd speed 1/min: 780
Calibrating nozzle-holder
             : 0 681 343 009
 assembly
                                                           Sleeve travel mm: 4.20...4.40
Opening
 pressure, bar : 172...175
                                                         4th speed 1/min: 1400
                                                           Sleeve travel mm: 8.10...8.20
Test inj. tubing : 1 680 750 014
                                                         SLEEVE POSITION
                                                         Control-lever position
                                                                      Degree: -1
1/min: 1430
Outside diameter
x Wall thickness
                     : 6.00x2.00x600
                                                        Cont.-rod travelmm: 15.20...17.80
x Length mm
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                        1st version
                                                        Speed 1/min: 1350
Charge press. hPa: 700
    per values ____
                                                        Del.quantity cm3/: 68.0...69.0
1000H.: (66.0...71.0)
Dispersion cm3/: 3.00
1000H.: (5.00)
START OF DELIVERY
Test pressure, bar: 25...27
                  : 2.20...2.30
Prestroke mm
                     : (2.15...2.35)
L24
```

HIGHEST RATED SPEED 1st version Control-lever position degrees: 55...63 Testing: 1st c-rod trav.mm: 10.70 Speed 1/min: 1390...1400 2nd c-rod trav.mm: 4.00 1/min : 1515...1545 1/min : 1650 Speed 4th speed C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 14...21 Testing: 1/min : 100 Speed C-rod trav.mm min : 11.20 Speed 1/min : 300 : 9.70...9.90 C-rod trav.mm CONSTANT REGULATION 1/min : 350...450 Speed TORQUE CONTROL Torque-control curve - 1st version 1/min : 1350 1st speed C-rod trav.mm : 11.70...11.80 2nd speed 1/min: 500 C-rod trav.mm : 11.70...11.90 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 Spe∈d Pressure hPa : 700 Contr.-rod trav.mm: 11.70...11.80 Measurement 1/min : 500 Speed 1st pressure hPa : -C-rod trav.mm : 11.40...11.50 2nd pressure hPa : 260 C-rod trav.mm : 11.60...11.70 FUEL-DELIVERY CHARACTERISTICS Charge press. hPa: 700 1/min : 800 Speed Del.quantity cm3/: 57.5...59.5 1000H.: (55.0...62.0) Charge press. hPa : -1/min : 500

STARTING FUEL DELIVERY

Speed 1/min : 100

Del.quantity cm3/: 46.5...48.5 1000H:: (44.5...50.5)

Contr.-rod trav.mm: 18.10...18.50

Remarks:

Test electrically-released starting

quantity (EES) with 12 volts

Speed

Del.quantity cm3/: 46.5...48.5 1000H.: (44.5...50.5)

```
Contr.-red trav.mm: 9.00...12.00
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                      Cam sequence : 1-5-3-6-2-4
Note inst. in remarks column
                    : FIA 5.9 A 1
: 12.09.86
Test sheet
                                                      SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Edition
Superceeded
Calibrating oil
                   : ISO-4113
                                                      SD mark cyl. no. : 1
Combination no.
                    : 0 400 846 550
                                                      BASIC SETTING
Injection pump
Pump designation : PES6A90D410RS2713
                                                                   1/mi: 1350
                                                      1st speed
EP type number
                    : 0 410 896 083
                                                      Contr.-rod trav.mm: 11.70...11.80
Governor
Governor design.
                    : RQV300...1350AB1175-
                                                      Del.quantity cm3/: 6.8...6.9
                      3L
Governer no.
                   : 0 420 212 192
                                                                    100H.: (6.6...7.1)
Customer-spec. information
Customer
                   : FIAT
                                                      Dispersion
                                                                    cm3/:0.3
                   : 8060.25.640
                                                                    100H.: (0.5)
Engine
                                                      2nd speed 1/min: 300.0
Contr.-rod trav. m: 9.7...9.9
1st version kW : 103.0
              1/min: 2700
Speed
                                                      Del.quantity cm3/: 1.2...1.8
TEST BENCH REQUIREMENTS
                                                                    100H.: (1.0...2.0)
                                                                    cm3/: 0.2
                                                      Dispersion
Calibrating-oil inlet temp. °C
                                                                    100H.: (0.4)
                    : 38...42
                                                      (B) Setting of injection pump with
Overflow valve
                                                          externally-mounted governor
                    : 1 417 413 000
                                                      SLEEVE TRAVELS
                                                      1st speed 1/min: 300
Inlet press., bar : 1.00
                                                        Sleeve travel mm: 0.90...1.10
                                                      2nd speed 1/min: 435
Calibrating nozzle-holder
                                                      Steeve travel mm: 2.40...2.60
3rd speed 1/min: 780
              : 0 681 343 009
 assembly
                                                      Sleeve travel mm: 4.20...4.40
4th speed 1/min: 1400
Opening
 pressure, bar . 172...175
                                                        Sleeve travel mm: 8.10...8.20
                                                      SLEEVE POSITION
Test inj. tubing : 1 680 750 014
                                                      Control-lever position
Outside diameter
                                                                   Degree: -1
x Wall thickness
                                                                    17min: 1430
                                                      Cont.-rod travelmm: 15.20...17.80
                   : 6.00x2.00x600
x Length mm
                                                     FULL-LOAD DELIV. AT FULL-LOAD STOP
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                      1st version
    per values ____
                                                      Speed
                                                                    1/min: 1350
                                                      Charge press. hPa : 700
                                                     Del.quantity cm3/: 68.5...69.5
1000H.: (66.5...71.5)
Dispersion cm3/: 3.00
1000H.: (5.00)
START OF DELIVERY
Test pressure, bar: 25...27
Prestroke mm : 2.20...2.30
                   : (2.15...2.35)
```

L26

HIGHEST RATED SPEED 1st version Control-lever position degrees: 55...63 Testing: 1st c-rod trav.mm : 10.70 Speed 1/min: 1390...1400 2nd c-rod trav.mm : 4.00 1/min : 1515...1545 Speed 4th speed 1/min: 1650 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 14...21 Testing: 1/min : 100 Speed G-rod trav.mm min : 11.20 Speed 1/min : 300 : 9.70...9.90 C-rod trav.mm CONSTANT REGULATION 1/min: 350...450 Speed TORQUE CONTROL Torque-control curve - 1st version 1/min : 1350 1st speed C-rod trav.mm : 11.70...11.80 2nd speed 1/min : 500 C-rod trav.mm : 11.70...11.90 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 hPa : 700 Speed Pressure Contr.-rod trav.mm: 11.70...11.80 Measurement 1/min : 500 Speed 1st pressure hPa : -C-rod trav.mm : 11.20...11.30 2nd pressure hPa : 260 C-rod trav.mm : 11.40...11.50 FUEL-DELIVERY CHARACTERISTICS Charge press, hPa: 700 1/min : 800 Speed Del.quantity cm3/: 59.0...61.0 1000H.: (56.5...63.5) Charge press. hPa: Speed 1/min: 500
Del.quantity cm3/: 44.0...46.0

1000H.: (42.0...48.0)

STARTING FUEL DELIVERY

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                       Contr.-rod trav.mm: 9.00...12.00
                                                       Cam sequence : 1-5-3-6-2-4
Note inst. in remarks column
Test sheet
                    : FIA 5.9 B
: 13.05.87
                                                       SD ang. spacing ^{\circ}CS: 0-60-120-180-240-300 Tolerance + - ^{\circ}: 0.50 (0.75)
Edition
Superceeded
                    : 12.9.86
Calibrating oil
                  : ISO-4113
                                                       SD mark cyl. no. : 1
Combination no.
                    : 0 400 846 551
                                                       BASIC SETTING
Injection pump
Pump designation : PES6A90D410RS2723
                                                                       1/mi: 1500
                                                       1st speed
EP type number
                    : 0 410 896 085
                                                       Contr.-rod trav.mm: 9.00...9.10
Governor
Governor design.
                   : RQV300...1500AB1152-
                                                       Del.quantity cm3/: 4.7...4.8
                      1L
                   : 0 420 212 195
Governer no.
                                                                      100H.: (4.5...5.0)
Customer-spec. information
                                                                      cm3/:0.3
Customer
                   : IVECO-FIAT
                                                       Dispersion
Engine
                    : 8060.05.661
                                                                      100H.: (0.4)
1st version kW : 81.0
                                                                      1/min: 300.0
                                                       2nd speed
                                                       Contr.-rod trav. m: 8.2...8.4
Del.quantity cm3/: 1.0...1.6
100H.: (0.8...1.8)
              1/min: 3000
Speed
TEST BENCH REQUIREMENTS
                                                                      cm3/: 0.2
100H.: (0.4)
                                                       Dispersion
Calibrating-oil inlet temp. °C
                    : 38...42
                                                       (B) Setting of injection pump with externally-mounted governor
Overflow valve
                    : 1 417 413 000
                                                       SLEEVE TRAVELS
                                                       1st speed 1/min: 345
Inlet press., bar: 1.00
                                                         Sleeve travel mm: 2.20...2.40
                                                       2nd speed 1/min: 410
Sleeve travel mm: 2.80...3.20
Calibrating nozzle-holder
             : 0 681 343 009
 assembly
                                                       3rd speed 1/min: 630
                                                         Sleeve travel mm: 4.30...4.70
Opening
pressure, bar : 172...175
                                                       4th speed 1/min: 1545
                                                         Steeve travel mm: 8.60...8.70
                                                       5th speed 1/min: 1650
                                                         Sleeve travel mm: 9.30...9.50
Test inj. tubing : 1 680 750 014
                                                       SLEEVE POSITION
Outside diameter
x Wall thickness
                                                       Control-lever position
                                                                    Degree: -1
1/min: 1525
                   : 6.00x2.00x600
x Length mix
(A) Injection pump setting values
                                                       Cont.-rod travelmm: 15.20...17.80
    Insp. values in parentheses
Set constant delivery quant.
                                                       FULL-LOAD DELIV. AT FULL-LOAD STOP
    per values ____
                                                       1st version
JTART OF DELIVERY
                                                       Speed
                                                                      1/min: 1500
                                                       Del.quantity cm3/: 47.5...48.5
1000H: (45.5...50.5)
Dispersion cm3/: 3.00
Test pressure, bar: 25...27
                   : 2.20...2.30
Prestroke mm
                                                                    1000H.: (4.50)
                    : (2.15...2.35)
L28
```

```
HIGHEST RATED SPEED
1st version
Control-lever
 position degrees: 55...63
Testing:
1st c-rod trav.mm : 8.00
         1/min : 1540...1550
  Speed
2nd c-rod trav.mm : 4.00
  Speed
           1/min : 1635...1665
4th speed
          1/min : 1800
                 : 0.00...1.00
  C-rod trav.mm
LOWEST RATED SPEED I
Control-lever
 position degrees: 15...23
Testing:
            1/min : 100
Speed
C-rod trav.mm min: 9.00
Speed 1/min: 300
C-rod trav.mm
                  : 8.20...8.40
CONSTANT REGULATION
            1/min : 330...430
Speed
TORQUE CONTROL
Dimension a mm : 1.30
Torque-control curve - 1st version
           1/min : 1500
1st speed
                : 9.00...9.10
  C-rod trav.mm
2nd speed 1/min: 500
 C-rod trav.mm : 10.30...10.40
3rd speed 1/min : 785
  C-rod trav.mm : 9.90...10.10
4th speed 1/min : 1210
  C-rod trav.mm : 9.30...9.50
FUEL-DELIVERY CHARACTERISTICS
           1/min : 500
Speed
Del.quantity cm3/: 43.0...45.0
            1000H.: (40.5...47.5)
STARTING FUEL DELIVERY
Speed
            1/min : 100
Del.quantity cm3/: 95.0...105.0
            1000H.: (92.0...108.0)
Contr.-rod trav.mm: 15.70...16.10
Remarks:
Test electrically-released starting
quantity (EES) with 12 volts
```

BOSCH INJ. PUMP TEST SPECIFICATIONS SD ang. spacing 0 CS: 0-60-120-180-240-300 Tolerance $^{+}$: 0.50 (0.75) Note inst. in remarks column : FIA 5,9 A 2 Test sheet Edition : 15.05.87 SD mark cyl. no. : 1 Superceeded Calibrating oil : ISO-4113 BASIC SETTING : 0 400 846 557 Combination no. 1st speed 1/mi: 1350 Contr.-rod trav.mm: 11.50...11.60 Injection pump : PES6A90D410RS2713 Pump designation Del.quantity cm3/ : 7.6...7.7 EP type number : 0 410 896 083 Governor 100H.: (7.4...7.9) Governor design. : RQV300...1350AB1175-5L : 0 420 212 199 Dispersion cm3/:0.3Governer no. 100H.: (0.5) Customer-spec. information Customer : FIAT -2nd speed 1/min: 300.0 Contr.-rod trav. m: 8.4...8.6 Del.quantity cm3/: 1.0...1.6 100H.: (0.8...1.8) : 8060.25.630 Engine TEST BENCH REQUIREMENTS cm3/: 0.2 100H.: (0.4) Dispersion Calibrating-oil inlet temp. OC : 38...42 (B) Setting of injection pump with Overflow valve externally-mounted governor : 1 417 413 000 SLEEVE TRAVELS 1st speed 1/min: 300 Inlet press., bar: 1.00 Sleeve travel mm: 0.80...0.90 1/min: 435 Calibrating nozzle-holder 2nd speed : 0 681 343 009 Sleeve travel mm: 2.30...2.70 assembly 3rd speed 1/min: 660 Sleeve travel mm: 3.80...4.20 Opening 4th speed 1/min: 1395 Sleeve travel mm: 7.70...7.80 pressure, bar : 172...175 Test inj. tubing : 1 680 750 014 SLEEVE POSITION Control-lever position Degree: -1 1/min: 1470 Outside diameter x Wall thickness Speed Cont.-rod travelmm: 15.20...17.80 x Length mm : 6.00x2.00x600 FULL-LOAD DELIV. AT FULL-LOAD STOP (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. ist version Speed per values ____ 1/min: 1350 Charge press. hPa: 700 Del.quantity cm3/: 76.5...77.5 1000H.: (74.5...79.5) START OF DELIVERY Test pressure, bar: 25...27 cm3/ : 3.00Dispersion 1000H.: (5.00) : 2.20...2.30 Prestroke mm : (2.15...2.35) Contr.-rod trav.mm: 9.00...12.00 HIGHEST RATED SPEED Cam sequence : 1-5- 3- 6- 2- 4 1st version

M02

```
Control-lever
 position degrees: 54...62
Testing:
1st c-rod trav.mm : 10.50
  Speed 1/min: 1390...1400
2nd c-rod trav.mm : 4.00
            1/min : 1520...1550
  Speed
4th speed 1/min: 1650
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Control-lever
 position degrees: 10...18
Testing:
             1/min : 100
Speed
C-rod trav.mm min: 9.90
Speed 1/min: 300
                  : 8.40...8.60
C-rod trav.mm
CONSTANT REGULATION
            1/min: 360...460
Speed
TORQUE CONTROL
Torque-control curve - 1st version
            1/min : 1350
1st speed
  C-rod trav.mm : 11.50...11.60
2nd speed 1/min: 500
  C-rod trav.mm : 11.50...11.70
compensator (LDA, ADA, ALDA)
1st version
Setting
            1/min : 500
hPa : 700
Speed
Pressure
Contr.-rod trav.mm: 11.50...11.60
Measurement
            1/min : 500
Speed
1st pressure hPa : -
C-rod trav.mm : 10.50...10.60
2nd pressure hPa : 348_____
C-rod trav.mm : 11.30...11.40
3rd pressure hPa : 330
  C-rod trav.mm : 10.90...11.10
FUEL-DELIVERY CHARACTERISTICS
Charge press. hPa: 700
            1/min : 800
Speed
Del.quantity cm3/: 68.5...70.5
            1000H.: (66.0...73.0)
Charge press. hPa : -
            1/min : 500
Speed
Del.quantity cm3/: 47.0...49.0
1000H.: (45.0...51.0)
```

STARTING FUEL DELIVERY

Test electrically-released starting quantity (EES) with 12 volts

M03

```
: 1-5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                       Cam sequence
Note inst. in remarks column
                                                       SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
                    : MB 6,0 A 4
Test sheet
                    : 03.04.87
Edition
Superceeded
                   : ISO-4113
Calibrating oil
                                                       BASIC SETTING
Combination no.
                    : 0 400 846 563
                                                                      1/mi: 1200
                                                       1st speed
                                                       Contr.-rod trav.mm: 11.10...11.20
Injection pump
                    : PES6A90D410RS2667
Pump designation
EP type number
                    : 0 410 896 080
                                                       Del.quantity cm3/: 5.8...5.9
Governor
                    : RQV300...1200AB1065-
                                                                     100H.: (5.6...6.1)
Governor design.
                      15L
                    : 0 420 212 210
                                                                     cm3/:0.3
Governer no.
                                                       Dispersion
                                                                     100H.: (0.5)
Customer-spec. information
Customer
                    : DAIMLER-BENZ
                                                                     1/min: 300.0
                                                       2nd speed
                    : OM 366
Engine
                                                       Contr.-rod trav. m: 8.9...9.1
                                                      Del.quantity cm3/: 0.9...1.3
100H.: (0.7...1.5)
1st version kW
                  : 92.0
                                                                     cm3/:0.2
                                                       Dispersion
TEST BENCH REQUIREMENTS
                                                                     100H.: (0.4)
Calibrating-oil inlet temp. °C
                                                       (B) Setting of injection pump with
                    : 38...42
                                                           externally-mounted governor
                                                       SLEEVE TRAVELS
Overflow valve
                    : 1 417 413 000
                                                       1st speed 1/min: 300
                                                         Sleeve travel mm: 0.80...1.30
                                                      2nd speed 1/min: 500
Sleeve travel mm: 2.30...2.80
3rd speed 1/min: 750
Inlet press., bar : 1.00
Calibrating nozzle-holder
                   : 0 681 343 009
                                                         Sleeve travel mm: 4.30...4.70
 assembly
                                                       4th speed
                                                                    1/min: 1260
                                                         Sleeve travel mm: 8.40...8.60
Opening
pressure, bar
                   : 172...175
                                                       SLEEVE POSITION
                                                       Control-lever position
                                                      Degree: -1
Speed 1/min: 1260
Cont.-rod travelmm: 15.20...17.80
Test inj. tubing : 1 680 750 015
Outside diameter
x Wall thickness
                   : 6.00x1.50x600
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
x Length mm
(A) Injection pump setting values
                                                       1st version
    Insp. values in parentheses
Set constant delivery quant.
                                                                     1/min: 1200
                                                       Speed
                                                      Del.quantity cm3/: 58.0...59.0
1000H:: (56.0...61.0)
Dispersion cm3/: 3.00
    per values
                                                                    1000H.: (5.00)
START OF DELIVERY
Test pressure, bar: 25...27
                                                      HIGHEST RATED SPEED
Prestroke mm
                    : 2.25...2.35
                                                      1st version
                    : (2.20...2.40)
                                                      Control-lever
Sontrared trav.mm: 9.00...12.00
                                                       position degrees: 56...64
M04
```

```
Testing:
1st c-rod trav.mm : 10.10
  Speed
           1/min : 1240...1250
2nd c-rod trav.mm : 4.00
           1/min : 1330...1360
  Speed
4th speed 1/min: 1500
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Control-lever
 position degrees: 16...24
Testing:
Speed
            1/min : 100
C-rod trav.mm min: 10.30
            1/min : 300
C-rod trav.mm
                   : 8.90...9.10
CONSTANT REGULATION
            1/min: 540...680
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed
            1/min : 1200
                 : 11.10...11.20
  C-rod trav.mm
2nd speed
            1/min : 600
  C-rod trav.mm : 12.30...12.40
3rd speed 1/min : 900
  C-rod trav.mm : 11.80...12.00
4th speed 1/min: 1000
  C-rod trav.mm : 11.30...11.60
SWITCH-OVER POINT
            1/min : 220 (240)
Speed
FUEL-DELIVERY CHARACTERISTICS
Speed 1/min : 600
Del.quantity cm3/: 54.0...56.0
1000H.: (51.5...58.5)
            1/min: 900
Speed
Del.quantity cm3/: 56.0...59.0
            1000H.: (53.5...61.5)
STARTING FUEL DELIVERY
Speed 1/min: 100
Del.quantity cm3/: 78.0...88.0
            1000H.: (75.0...91.0)
Contr.-rod trav.mm: 17.00...17.40
Remarks:
Set shutoff stop to contact at
3.0...3.5 mm control-rod travel.
```

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : KHD 4,1 D : 13.05.87 : 1.86 Calibrating oil : ISO-4113

: 0 400 864 063 Combination no.

Injection pump

Pump designation : PES4A85D410/3RS2638 EP type number : 0 410 884 950

Governor

Governor design. : RSV325...1400A8C707-

3L

Governer no. : 0 420 232 440

Customer-spec. information Customer

: BF4L913 Engine

1st version kW : 78.0 1/min: 2800 Speed

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Calibrating nozzle-holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test inj. tubing : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values _____

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Contrrod trav.mm: 9 Cam sequence : 1	9.0012.00 - 3- 4- 2	4th speed 1/min : 1540 C-rod trav.mm : 0.301.40
	i	LOWEST RATED SPEED I Control-lever
SD ang. spacing ^O CS: C Tolerance + - : C	0-90-180-270 0.50 (0.75)	position degrees: 917 Secting point w/out aux. spring Speed 1/min: 325
BASIC SETTING	† 	Contrrod trav.mm: 8.0 Speed 1/min: 325
1st speed 1/mi: 1	1250	C-rod trav.mm : 8.408.60 C-rod trav.mm : 2.00
Contrrod trav.mm: 1	12.7012.80	Speed 1/min: 620680
Del.quantity cm3/ : 8	3.28.3	TORQUE CONTROL
100H.:	(8.08.5)	Torque-control curve - 1st version 1st speed 1/min: 1250
Dispersion cm3/: 0	0.3	C-rod trav.mm : 12.7012.80 2nd speed 1/min : 500 C-rod trav.mm : 13.7013.80
100H.:	(0.4)	3rd speed 1/min: 850 C-rod trav.mm: 13.5013.60
2nd speed 1/min: 3	325.0	4th speed 1/min: 950
Contrrod trav. m: 8 Del.quantity cm3/ : 0	0.81.4	C-rod trav.mm : 13.2013.40
100H.: (Dispersion cm3/: C	(0.61.6) 	compensator (LDA,ADA,ALDA)
100H.:	(0.4)	1st version
SLEEVE POSITION	i	Setting Speed 1/min: 500 Pressure hPa: 700
Control-lever position	on i	Speed 1/min: 500
Degree: - Speed 1/min: 8	300	Contrrod trav.mm: 13.7013.80
Controd travelmm: C	0.300.70	
Governor-spring reloa	l d	Measurement Speed 1/min: 500
Notch setting x : 4		7/11/11 . 500
	1	1st pressure hPa : -
FULL-LOAD DELIV. AT F	OLL-LOAD STOP	C-rod trav.mm : 12.3012.40 2nd pressure hPa : 390
1st version	i	C-rod trav.mm : 13.5013.60
Speed 1/min: 1		3rd pressure hPa : 250
Charge press. hPa : 7 Del.quantity cm3/ : 8	(UU 1 12 5 97 5 1	C-rod trav.mm : 12.8013.00
1000H.:	(80.585.5)	FUEL-DELIVERY CHARACTERISTICS
Dispersion cm3/ : 3	3.00	Charge press. hPa : 700
1000н.: ((4.50)	Speed 1/min: 850
HIGHEST RATED SPEED	•	Del.quantity cm3/: 84.586.5 1000H.: (82.089.0)
1st version	i	Charge press. hPa : -
Control-lever	1 1	Speed 1/min: 500
position degrees: 4	1957	Del.quantity cm3/: 59.561.5 1000H.: (57.563.5)
Testing:		
1st c-rod trav.mm : 1 Speed 1/min : 1		STARTING FUEL DELIVERY
2nd c-rod trav.mm : 4		Virusianto i Vojes Velsatenti
Speed 1/min: 1	3151345	
3rd c-rod trav.mm : 4 Speed 1/min : 1	1.UU 360 1390	Speed 1/min: 100
·	1	
M07		

Del.quantity cm3/: 95.0...105.0 1000H.: (92.0...108.0) Contr.-rod trav.mm: 17.10...17.30

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

BOSCH INJ. PUMP TEST SPECIFICATIONS SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Note inst. in remarks column : KHD 6,1 A 5 Test sheet Edition : 13.05.87 BASIC SETTING Superceeded Calibrating oil : ISO-4113 1st speed 1/mi: 1400 Contr.-rod trav.mm: 10.80...10.90 : 0 400 866 080 Combination no. Injection pump Del.quantity cm3/: 7.6...7.7 Pump designation : PES6A85D410/3RS2415 EP type number : 0 410 886 915 100H.: (7.4...7.9) Governor cm3/:0.3Governor design. : RSV325...1400A8C707-Dispersion 4L Governer no. : 0 420 232 461 100H.: (0.4) 1/min: 325.0 Customer-spec. information 2nd speed Customer : KHD Contr.-rod trav. m: 7.9...8.1 Del.quantity cm3/: 0.9...1.5 100H.: (0.7...1.7) Dispersion cm3/: 0.2 100H.: (0.4) : BF6L913 Engine TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C SLEEVE POSITION : 38...42 Control-lever position Degree: -3 17min: 800 Overflow valve Speed Cont.-rod travelmm: 0.30...0.70 : 1 417 413 000 Inlet press., bar : 1.00 Governor-spring reload Notch setting x : 5.25 Calibrating nozzle-holder assembly : 0 681 343 009 FULL-LOAD DELIV. AT FULL-LOAD STOP Opening 1st version Speed 1/min: 1400 Charge press. hPa: 700 Del.quantity cm3/: 76.0...77.0 1000H.: (74.0...79.0) Dispersion cm3/: 3.00 1000H.: (4.50) pressure, bar : 172...175 : 1 680 750 014 Test inj. tubing Outside diameter x Wall thickness : 6.00x2.00x600 HIGHEST RATED SPEED x Length mm 1st version Control-lever (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. position degrees: 65...73 Testing: per values ____ 1st c-rod trav.mm : 9.80 START OF DELIVERY Speed 1/min: 1440...1450 Test pressure, bar: 25...27 2nd c-rod trav.mm : 4.00 Speed 1/min: 1470...1500
3rd c-rod trav.mm: 4.00
Speed 1/min: 1505...1535
4th speed 1/min: 1600 : 1.90...2.00 : (1.85...2.05) Prestroke mm Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 5- 3- 6- 2- 4 C-rod trav.mm : 0.30...1.40 M09

LOWEST RATED SPEED I Control-lever position degrees: 14...22 Setting point w/out aux. spring Speed 1/min: 325 Contr.-rod trav.mm: 7.5 Testing: 1/min : 100 Speed C-rod trav.mm min : 19.50 Speed 1/min: 325 C-rod trav.mm: 7.90...8.10 C-rod trav.mm: 2.00 1/min : 600...660 Speed TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1400 C-rod trav.mm : 10.80...10.90 2nd speed 1/min: 500 C-rod trav.mm: 12.00...12.10 3rd speed 1/min: 1040 C-rod trav.mm: 11.40...11.60 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 hPa : 700 Speed Pressure Contr.-rod trav.mm: 12.00...12.10 Measurement 1/min : 500 Speed 1st pressure hPa : -C-rod trav.mm : 10.50...10.60 2nd pressure hPa : 360 C-rod trav.mm : 11.70...11.80 3rd pressure hPa : 95 C-rod trav.mm : 10.60...10.80 FUEL-DELIVERY CHARACTERISTICS Charge press. hPa : -Speed 1/min : 50 Speed 1/min: 500 Del.quantity cm3/: 44.0...47.0 1000H.: (42.0...49.0) STARTING FUEL DELIVERY LOW IDLE

M10

Speed 1/min: 325 Contr.-rod trav.mm: 7.90...8.10 Del.quantity cm3/: 9.5...15.5 1000H.: (7.5...17.5) Dispersion cm3/: 2.00 1000H.: (4.00)

Remarks:

Test electrically-released starting quantity (EES) with 12 volts

The stop position of the control rod must be easily reached with the stop lever

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                        SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
Note inst. in remarks column
                     : KHD 6,1 A 7
Test sheet
                     : 13.05.87
Edition
                                                        BASIC SETTING
Superceeded
                    : ISO-4113
Calibrating oil
                                                                    1/mi: 1150
                                                         1st speed
                                                        Contr.-rod trav.mm: 11.00...11.10
                     : 0 400 866 120
Combination no.
Injection pump
                                                        Del.quantity cm3/: 6.8...6.9
Pump designation : PES6A85D410/3RS2415
                     : 0 410 886 915
EP type number
                                                                        100H.: (6.6...7.1)
Governor
Governor design.
                     : RSV325...1150A8C673-
                                                        Dispersion
                                                                       cm3/:0.3
                      1L
Governer no.
                     : 0 420 232 489
                                                                       100H.: (0.4)
Customer-spec. information
                                                         2nd speed
                                                                       1/min: 325.0
                                                        Contr.-rod trav. m: 8.0...8.2
Customer
                     : KHD
                                                        Del.quantity cm3/: 0.9...1.5
100H:: (0.7...1.7)
Dispersion cm3/: 0.2
100H:: (0.4)
                     : BF6L913
Engine
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. OC
                                                        SLEEVE POSITION
                     : 38...42
                                                        Control-lever position
                                                                      Degree: -3
                                                                       17min: 800
Overflow valve
                                                        Speed
                     : 1 417 413 000
                                                        Cont.-rod travelmm: 0.30...0.70
Inlet press., bar: 1.00
                                                        Governor-spring reload
                                                        Notch setting x : 4.30
Calibrating nozzle-holder
                    : 0 681 343 009
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
 assembly
Opening
                                                        1st version
                                                        Speed 1/min: 1150
Del.quantity cm3/: 68.0...69.0
1000H.: (66.0...71.0)
Dispersion cm3/: 3.00
 pressure, bar : 172...175
Test inj. tubing : 1 680 750 014
                                                                      1000H.: (4.50)
Outside diameter
x Wall thickness
                                                        HIGHEST RATED SPEED
                    : 6.00x2.00x600
                                                        1st version
x Length mm
                                                        Control-lever
(A) Injection pump setting values
                                                         position degrees: 49...57
    Insp. values in parentheses
Set constant delivery quant.
                                                        Testing:
    per values ____
                                                        1st c-rod trav.mm : 10.00
                                                                     1/min : 1190...1200
                                                           Speed
                                                        2nd c-rod trav.mm : 4.00
START OF DELIVERY
                                                        Speed 1/min: 1215...1245

3rd c-rod trav.mm: 4.00

Speed 1/min: 1235...1265

4th speed 1/min: 1400
Test pressure, bar: 25...27
                     : 1.90...2.00
Prestroke mm
                     : (1.85...2.05)
Contr.-rod trav.mm: 9.00...12.00
                                                          C-rod trav.mm : 0.30...1.40
                    : 1-5-3-6-2-4
Cam sequence
                                                        LOWEST RATED SPEED I
M11
```

Control-lever position degrees: 13...21 Setting point w/out aux. spring 1/min : 325 Speed Contr.-rod trav.mm: 5.0

Testing:

1/min : 100 Speed C-rod trav.mm min: 19.50 Speed 1/min : 325

C-rod trav.mm : 5.40...5.60 C-rod trav.mm : 2.00

1/min : 505...565 Speed

TORQUE CONTROL

Torque-control curve - 1st version 1/min : 1150 1st speed C-rod trav.mm : 11.00...11.10

2nd speed 1/min: 500

C-rod trav.mm : 11.70...11.80

4th speed 1/min: 990

C-rod trav.mm : 11.30...11.50

STARTING FUEL DELIVERY

1/min : 100 Speed

Del.quantity cm3/: 100.0...110.0 1000H.: (97.0...113.0)

Contr.-rod trav.mm: 16.70...17.30

Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 5- 3- 6- 2- 4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet : MB 5.7 M 12 : 22.05.87 SD ang. spacing^DCS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Edition Superceeded Calibrating oil : ISO-4113 BASIC SETTING : 0 400 876 108 Combination no. 1st speed 1/mi: 1400 Injection pump Contr.-rod trav.mm: 8.50...8.60 Pump designation : PES6A80D410RS2085X EP type number : 0 410 886 045 Del.quantity cm3/: 4.1...4.2 Governor Governor design. : RSV350...1425A2C1001 100H.: (4.0...4.4) : 0 420 232 464 Governer no. cm3/:0.2Dispersion Customer-spec. information 100H.: (0.3) Customer : DAIMLER-BENZ 2nd speed 1/min: 350.0 Contr.-rod trav. m: 7.4...7.6 Del.quantity cm3/: 1.0...1.4 Engine : 0M352 1st version kW : 66.0 100H.: (0.8...1.5) cm3/: 0.2 Speed 1/min: 2850 Dispersion 100H.: (0.3) TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. OC SLEEVE POSITION : 38...42 Control-lever position Degree: -3 17min: 800 Overflow valve : 1 417 413 000 Cont.-rod travelmm: 0.30...1.00 Governor-spring reload Inlet press., bar : 1.00 Notch setting x: 4.00 Calibrating nozzle-holder : 0 681 343 009 FULL-LOAD DELIV. AT FULL-LOAD STOP assembly Opening 1st version Speed 1/min: 1400 pressure, bar : 172...175 Del.quantity cm3/: 41.5...42.5 1000H.: (40.0...44.0) Dispersion cm3/: 2.00 1000H.: (3.50) Test inj. tubing : 1 680 750 014 Outside diameter HIGHEST RATED SPEED x Wall thickness : 6.00x2.00x600 x Length mm 1st version Control-lever position degrees: 46...54 (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. Testing: 1st c-rod trav.mm : 7.50 Speed 1/min : 1455...1465 2nd c-rod trav.mm : 4.00 per values ____ START OF DELIVERY Speed 1/min: 1475...1505 3rd c-rod trav.mm: 4.00 Test pressure, bar: 25...27 1/min : 1525...1555 : 2.15...2.25 Speed Prestroke mm : (2.10...2.30) 4th speed 1/min : 1600 M13

C-rod trav.mm : 0.30...1.40 LOWEST RATED SPEED I Setting point w/out aux. spring Speed i/min : 350 Contr.-rod trav.mm: 7.5 Testing: 1/min : 100 Speed C-rod trav.mm min: 19.50 Speed 1/min: 350 C-rod trav.mm: 7.40...7.60 C-rod trav.mm: 2.00 Speed 1/min: 730...790 TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1400 C-rod trav.mm : 8.50...8.60 2nd speed 1/min: 500 C-rod trav.mm : 9.80...9.90 3rd speed 1/min : 800 C-rod trav.mm : 8.80...9.10 FUEL-DELIVERY CHARACTERISTICS 1/min : 500 Speed Del.quantity cm3/: 40.5...42.5 1000H:: (38.5...44.5) 1/min : 800 Speed Del.quantity cm3/: 39.0...41.0 1000H.: (37.0...43.0) STARTING FUEL DELIVERY 1/min : 100 Speed Del.quantity cm3/: 78.0...88.0 1000H.: (75.0...91.0)

```
Cam sequence : 1- 5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                    SD ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
                   : RAB 9,7 D
Test sheet
                   : 22.05.87
Edition
Superceeded
Calibrating oil
                  : ISO-4113
                                                    SD mark cyl. no. : 1
                   : 0 400 876 251
                                                    BASIC SETTING
Combination no.
Injection pump
                                                                   1/mi: 1050
                                                    1st speed
Pump designation
                   : PES6A95D41ORS2108
EP type number
                   : 0 410 896 983
                                                    Contr.-rod trav.mm: 13.60...13.70
Governor
                                                    Del.quantity cm3/: 13.3...13.5
Governor design. : RSV450...1050A1C607L
Governer no. `
                   : 0 420 232 381
                                                                  100H.: (13.1...13.7)
Customer-spec. information
                                                                  cm3/:0.3
Customer
                   : RABA
                                                    Dispersión
                                                                  100H.: (0.5)
Engine
                   : D2156 HMT6
1st version kW : 180.0
                                                                  1/min: 450.0
                                                    2nd speed
                                                    Contr.-rod trav. m: 6.2...6.4
              1/min: 2100
Speed
                                                    Del.quantity cm3/: 1.1...1.7
100H.: (0.8...1.9)
TEST BENCH REQUIREMENTS
                                                                  cm3/: 0.3
100H.: (0.5)
                                                    Dispersion
Calibrating-oil inlet temp. °C
                   : 38...42
                                                    SLEEVE POSITION
Overflow valve
                                                    Control-lever position
                   : 1 417 413 000
                                                                 Degree: -3
                                                                  17min: 800
                                                    Cont.-rod travelmm: 0.30...0.70
Inlet press., bar: 1.00
                                                    Governor-spring reload
Calibrating nozzle-holder
                  : 0 681 343 009
                                                    Notch setting x : 4.50
 assembly
                                                    FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
 pressure, bar : 172...175
                                                    1st version
                                                                  1/min: 1050
                                                    Speed
                                                    Del.quantity cm3/: 133.5...135.5
Test inj. tubing : 1 680 750 014
                                                                 1000H.: (131.5...137.5)
                                                                 cm3/ : 3.50
1000H.: (5.50)
Outside diameter
                                                    Dispersion
x Wall thickness
x Length mm
                 : 6.00x2.00x600
                                                    HIGHEST RATED SPEED
(A) Injection pump setting values
                                                    1st version
    Insp. values in parentheses
Set constant delivery quant.
                                                    Control-lever
                                                     position degrees: 50...58
    per values ____
                                                    Testing:
                                                    1st c-rod trav.mm : 12.60
START OF DELIVERY
                                                                1/min : 1090...1100
                                                      Speed
Test pressure, bar: 25...27
                                                    2nd c-rod trav.mm : 4.00
                   : 1.70...1.80
                                                                1/min : 1125...1155
                                                      Speed
Prestroke mm
                   : (1.65...1.85)
                                                    3rd c-rod trav.mm: 4.00
                                                                 1/min : 1160...1190
Contr.-rod trav.mm: 9.00...12.00
                                                      Speed
M15
```

```
4th speed 1/min : 1300
   C-rod trav.mm : 0.30...1.40
LOWEST RATED SPEED I
Control-leve:
 position degrees: 22...30
Setting point w/out aux. spring
             1/min : 450
Contr.-rod trav.mm: 5.5
Testing:
                1/min : 100
Speed
C-rod trav.mm min: 19.50
Speed 1/min: 450
C-rod trav.mm: 5.90...6.10
C-rod trav.mm: 2.00
                1/min : 560...620
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min: 1050
C-rod trav.mm: 13.60...13.70
2nd speed 1/min: 500
C-rod trav.mm: 13.60...13.80
3rd speed 1/min: 300
   C-rod trav.mm : 14.40...15.00
FUEL-DELIVERY CHARACTERISTICS
               1/min : 750
Speed
Del.quantity cm3/: 131.5...135.5
1000H.: (129.5...137.5)
STARTING FUEL DELIVERY
Speed
                1/min : 100
Del.quantity cm3/: 193.0...203.0
1000H.: (190.0...206.0)
Contr.-rod trav.mm: 19.50...21.00
Remarks:
     المنابان المنابان
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BOSCH INJ. PUMP TEST SPECIFICATIONS 1/mi: 1100 1st speed Note inst. in remarks column Contr.-rod trav.mm: 11,0...11,1 Del.quantity cm3/: 7,8...7,9 Test sheet 🏻 🤻 : KHD 6,1 D1 Edition : 7.86 cm3/:0.30Superceeded Dispersion Calibrating oil : ISO-4113 100H.: (0,45) Combination no. : 0 400 876 270 2nd speed 1/min: 325 Contr.-rod trav. m: 6,8...7,0
Del.quantity cm3/: 1,0...1,6
Dispersion cm3/: 0,20
100H.: (0,40) Injection pump Pump designation : PES6A85D410/3RS2537 Governor Governor design. : RSV325...1150A8B2020 SLEEVE POSITION Customer-spec. information Control-lever position Customer Degree: -3 17min: 800 : BF 6 L 913 Engine Cont.-rod travelmm: 0,3...1,0 TEST BENCH REQUIREMENTS Governor-spring reload Notch setting x : -Calibrating-oil inlet temp. C : 38...42 FULL-LOAD DELIV. AT FULL-LOAD STOP Inlet press., bar : 1.0 1st version 1/min: 1150 Speed Charge press. hPa : 650 Calibrating nozzle-holder Del.quantity cm3/: 78,0...79,0 1000H.: (76,0...81,0) : 0 681 343 009 assembly Opening pressure, bar : 172...175 HIGHEST RATED SPEED 1st version Control-lever Test inj. tubing : 1 680 750 014 position degrees: 61...69 Outside diameter Testing: x Wall thickness 1st c-rod trav.mm: 10,0 Speed 1/min: 1190...1200 : 6,00x2,00x600 x Length mm 2nd c-rod trav.mm : 4.0 Speed 1/min : 1225...1255 (A) Injection pump setting values 4th speed 1/min : 1350 Insp. values in parentheses Set constant delivery quant. C-rod trav.mm : 0.3...1.7 per values ____ LOWEST RATED SPEED I START OF DELIVERY Control-lever position degrees: 17...25 Setting point w/out aux. spring Speed 1/min: 325 : 1,9...2,0 : (1,85...2,05) : 1-5-3-6-2-4 Prestroke mm Contr.-rod trav.mm: 5.0 Cam sequence Testing: 1/min : 100 Speed SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0,5(0,75) C-rod trav.mm min: 19,0 Speed 1/min : 325 C-rod trav.mm : 5,4...5,6 C-rod trav.mm : 2,0 Speed 1/min : 510...570 BASIC SETTING

M17

compensator (LDA,ADA,ALDA)

1st version

Setting

1/min : 500 hPa : 700 Speed Pressure

Contr.-rod trav.mm: 12,6...12,8

Measurement

Speed 1/min : 500

ist pressure hPa : 370 C-rod trav.mm : 12,2...12,3

2nd pressure hPa : 90

C-rod trav.mm : 10,6...10,9 C-rod trav.mm : 10,6...10,7

FUEL-DELIVERY CHARACTERISTICS

1st version

Charge press. hPa: 650

Speed 1/min : 800

Del.quantity cm3/: 80,0...82,0 1000H.: (77,5...84,5)

1/min: 500 Speed

Del.quantity cm3/: 61,0...63,0

1000H.: (58,5...65,5)

STARTING FUEL DELIVERY

1/min : 100

Del.quantity cm3/: 120,0...130,0

LOW IDLE

1/min : 325 Speed

Del.quantity cm3/: 10,0...16,0

```
Contr.-rod trav.mm: 9.00...12.00
Cam sequence : 1-5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                    : KHD 6,1 D 4
Test sheet
                                                       SP ang. spacing ^{\circ} CS: 0-60-120-180-240-300 Tolerance + - ^{\circ} : 0.50 (0.75)
                    : 15.05 87
Edition
Superceeded
Calibrating oil
                   : ISO-4113
                                                       BASIC SETTING
Combination no.
                    : 0 400 876 270
                                                       1st speed
                                                                      1/mi: 1150
Injection pump
                                                       Contr.-rod trav.mm: 11.00...11.10
Pump designation : PES6A85D410RS2537
EP type number
                    : 0 410 886 908
                                                       Del.quantity cm3/: 7.9...8.1
Governor
Governor design.
                   : RSV325...1150A8C2020
                                                                     100H<sub>a</sub>: (7.7...8.3)
                    : 0 420 232 345
Governer no.
                                                      Dispersion
                                                                     cm3/:0.3
Customer-spec. information
                                                                     100H.: (0.4)
Customer
Engine
                    : BF6L913
                                                                     1/min: 325.0
                                                       2nd speed
                                                       Contr.-rod trav. m: 6.8...7.0
                                                      Del.quantity cm3/: 0.9...1.5
1st version kW : 106.6
                                                                     100H.: (0.7...1.7)
cm3/: 0.2
              1/min: 2300
Speed
                                                      Dispersion
                                                                     100H.: (0.4)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. OC
                                                       SLEEVE POSITION
                    : 38...42
                                                       Control-lever position
                                                                    Degree: -3
1/min: 800
Overflow valve
                    : 1 417 413 000
                                                      Cont.-rod travelmm: 0.30...0.70
Inlet press., bar: 1.00
                                                      Governor-spring reload
                                                      Notch setting x : 6.00
Calibrating nozzle-holder
 assembly
            : 0 681 343 009
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
                                                      1st version
Opening.
 pressure, bar : 172...175
                                                                     1/min: 1150
                                                      Speed
                                                      Charge press. hPa : 500
                                                      Del.quantity cm3/: 79.5...81.5
1000H.: (77.5...83.5)
Dispersion cm3/: 3.00
1000H.: (4.50)
Test inj. tubing : 1 680 750 014
Outside diameter
x Wall thickness
                    : 6.00X2.00X600
                                                      HIGHEST RATED SPEED
x Length mm
                                                      1st version
(A) Injection pump setting values
                                                      Control-lever
    Insp. values in parentheses
Set constant delivery quant.
                                                       position degrees: 56...64
    per values ____
                                                      Testing:
                                                      1st c-rod trav.mm : 10.00
Speed 1/min : 1190...1200
START OF DELIVERY
Test pressure, bar: 25...27
                                                      2nd c-rod trav.mm : 4.00
                                                         Speed
                                                                   1/min : 1240...1270
                                                      3rd c-rod trav.mm : 4.00
Prestroke mm
                    : 1.90...2.00
                    : (1.85...2.05)
                                                        Speed 1/min: 1270...1300
M19
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4th speed 1/min: 1435 C-rod tray.mm : 0.30...1.40 LOWEST RATED SPEED I Control-leve: position degrees: 20...28 Setting point w/out aux. spring 1/min : 325 Contr.-rod trav.mm: 6.4 Testing: Speed 1/min : 100 C-rod trav.mm min: 19.50 Speed 1/min: 325 C-rod trav.mm : 6.80...7.00 C-rod trav.mm : 2.00 1/min : 590...650 Speed TORQUE CONTROL Torque-control curve - 1st version t speed 1/min : 1150 C-rod trav.mm : 11.00...11.10 1st speed 2nd speed 1/min: 960 C-rod trav.mm : 11.70...11.90 3rd speed 1/min: 500 C-rod trav.mm : 12.50...12.60 compensator (LDA_ADA_ALDA) 1st version Setting 1/min : 500 Speed Pressure hPa : 700 Contr.-rod trav.mm: 12.50...12.60 Measurement 1/min : 500 Speed 1st pressure hPa : -: 10.60...10.70 C-rod trav.mm 2nd pressure hPa : 370 C-rod trav.mm : 12.20...12.30 3rd pressure hPa : 90 C-rod trav.mm : 10.60...10.90 FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa : 500 1/min : 850 Del.quantity cm3/: 88.0...91.0 1000H.: (86.0...93.0) Charge press. hPa : -Speed 1/min: 500 Del.quantity cm3/: 60.0...63.0 1000H.: (58.0...65.0)

STARTING FUEL DELIVERY

M20

Speed 1/min: 100
Del.quantity cm3/: 120.0...130.0
1000H.: (117.0...133.0)
Contr.-rod trav.mm: 17.40...18.00

Remarks:

Remarks: APPLICATION Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1- 5- 3- 6- 2- 4 Note inst. in remarks column Test sheet : MB 5.7 W 11 : 30.03.87 SD ang. spacing 0 CS: 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Edition Superceeded : 11.84 : ISO-4113 Calibrating oil BASIC SETTING Combination no. : 0 400 876 325 1st speed 1/mi: 1200 Injection pump Contr.-rod trav.mm: 9.30...9.40 Pump designation : PES6A90D410RS2569 : 0 410 896 071 EP type number Del.quantity cm3/: 4.3...4.4 Governor : RSV350...1200A0B1140 Governor design. 100H.: (4.1...4.6) -1L : 0 420 232 430 Governer no. Dispersion cm3/:0.3Customer-spec. information Customer : DAIMLER-BENZ 100H.: (0.5) 2nd speed 1/min: 350.0 Contr.-rod trav. m: 8.4...8.6 Del.quantity cm3/: 1.0...1.6 100H.: (0.7...1.9) Dispersion cm3/: 0.2 100H.: (0.4) Engine : OM 352 1st version kW : 70.0 Speed 1/min: 2400 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. C SLEEVE POSITION : 38...42 Control-lever position Degree: -3 Speed 17min: 800 Cont.-rod travelmm: 0.30...1.00 Overflow valve : 1 417 413 000 Inlet press., bar: 1.00 Governor-spring reload Notch setting x : 3.75 Calibrating nozzle-holder : 0 681 343 009 FULL-LOAD DELIV. AT FULL-LOAD STOP assembly Opening 1st version Speed 1/min: 1200
Del.quantity cm3/: 43.0...44.0
1000H.: (41.0...46.0)
Dispersion cm3/: 3.00 pressure, bar : 172...175 Test inj. tubing : 1 680 750 014 1000H.: (5.00) Outside diameter HIGHEST RATED SPEED x Wall thickness : 6.00x2.00x600 1st version x Length mm Control-lever (A) Injection pump setting values position degrees: 54...62 Insp. values in parentheses Set constant delivery quant. Testing: per values ____ 1st c-rod trav.mm : 8.30 1/min : 1230...1240 Speed START OF DELIVERY 2nd c-rod trav.mm : 4.00 Speed 1/min: 1255...1285 3rd c-rod trav.mm: 4.00 Test pressure, bar: 25...27 Speed 1/min: 1325...1355 : 2.25...2.35 Prestroke mm : (2.20...2.40) 1/min : 1480 4th speed M21

```
C-rod Crav.mm : 0.30...1.70
5th speed 1/min: 1245...1255
  C-rod trav.mm : 8.30
LOWEST RATED SPEED I
Control-lever
 position degrees: -
Testing:
Speed
              1/min : 100
C-rod trav.mm min : 19.50
Speed 1/min : 350
C-rod trav.mm : 8.40...8.60
C-rod trav.mm : 2.00
Speed 1/min : 570...630
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min : 1200
  C-rod trav.mm : 9.30...9.40
2nd speed 1/min: 850
C-rod trav.mm : 10.60...10.70
3rd speed 1/min : 950
  C-rod trav.mm : 10.30...10.50
4th speed 1/min: 1100
  C-rod trav.mm : 9.50...9.70
FUEL-DELIVERY CHARACTERISTICS
              1/min : 850
Speed
Del.quantity cm3/: 49.0...52.0
1000H.: (46.5...54.5)
STARTING FUEL DELIVERY
              1/min : 100
Speed
Del.quantity cm3/: 78.0...88.0
1000H:: (75.0...91.0)
Contr.-rod trav.mm: 16.10...16.50
Remarks:
APPLICATION
Unimog
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BOSCH INJ. PUMP TEST SPECIFICATIONS Contr.-rod trav.mm: 7.50...10.50 Cam sequence : 1-5-3-6-2-4 Note inst. in remarks column : DAF 6,2 0 3 Test sheet SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) : 13.05.87 Edition Superceeded : 12.9.86 Calibrating oil : ISO-4113 SD mark cyl. no. : 1 Combination no. : 0 400 876 327 START OF DELIVERY DIFFERENCE Injection pump betw.c-rod trav.mm: 8.50...9.50 Difference OCS : 2.50...3.50 : PES6A95D32ORS2693 Pump designation EP type number : 0 410 896 914 Governor : RSV300...1300A0C2195 BASIC SETTING Governor design. : 0 420 233 200 1/mi: 850 Governer no. 1st speed Contr.-rod trav.mm: 11.50...11.60 Customer-spec. information Customer Del.quantity cm3/: 7.6...7.7 : DNT 620 Engine 100H.: (7.4...7.9) 1st version kW : 130.0 Speed 1/min: 2600 Dispersion cm3/:0.3TEST BENCH REQUIREMENTS 100H.: (0.4) 1/min: 300.0 Calibrating-oil inlet temp. OC 2nd speed Contr.-rod trav. m: 6.4...6.6 Del.quantity cm3/: 0.7...1.1 : 38...42 100ff.: (0.4...1.3) Overflow valve cm3/:0.3: 1 417 413 000 Dispersion 100H.: (0.5) Inlet press., bar: 1.50 SLEEVE POSITION Control-lever position Calibrating nozzle-holder Degree: -3 assembly : 0 681 343 009 17min: 800 Cont.-rod travelmm: 0.30...0.70 Opening pressure, bar : 172...175 Governor-spring reload Notch setting x : 6.00 Test inj. tubing : 1 680 750 015 FULL-LOAD DELIV. AT FULL-LOAD STOP Outside diameter x Wall thickness 1st version : 6.00x1.50x600 Speed 1/min: 850 x Length mm Charge press. hPa: 700
Del.quantity cm3/: 76.5...77.5
1000H.: (74.5...79.5)
Dispersion cm3/: 3.50
1000H.: (4.50) (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values ____ HIGHEST RATED SPEED START OF DELIVERY Test pressure, bar: 25...27 1st version Control-lever Prestroke mm : 2.00...2.10 position degrees: 58...66 : (1.95...2.15) M23

Testing: 1st c-rod trav.mm : 9.70 Speed 1/min: 1340...1350 2nd c-rod trav.mm: 4.00 Speed i/min : 1400...1430 3rd c-rod trav.mm : 4.00 1/min : 1425...1455 Speed 1/min : 1570 4th speed C-rod trav.mm : 0.30...1.40 LOWEST RATED SPEED I Control-lever position degrees: 27...35 Setting point w/out aux. spring Speed 1/min : 300 Contr.-rod trav.mm: 6.0 1/min : 300 Speed C-rod trav.mm : 6.40...6.60 : 2.00 C-rod trav.mm 1/min : 595...655 Speed TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min : 1290 C-rod trav.mm : 10.70...10.80 2nd speed 1/min : 500 C-rod trav.mm : 11.50...11.60 4th speed 1/min: 1050 C-rod trav.mm : 10.90...11.10 compensator (LDA,ADA,ALDA) 1st version Setting 1/min : 600 Speed hPa : 700 Pressure Contr.-rod trav.mm: 11.50...11.60 Measurement 1/min : 600 Speed 1st pressure hPa : -C-rod trav.mm : 11.20...11.40 2nd pressure hPa : 250 C-rod trav.mm : 11.40...11.50 FUEL-DELIVERY CHARACTERISTICS Charge press. hPa: 700 1/min : 1290 Del.quantity cm3/ : 72.0...74.0 1000H.: (69.5...76.5) Charge press. haa : -Speed 1/min: 600 Del.quantity cm3/: 65.5...66.5 1000H.: (63.5...68.5)

LOW IDLE

Speed 1/min: 300 Contr.-rod trav.mm: 6.40...6.60 Del.quantity cm3/: 7.0...11.0 1000H.: (4.5...13.5) Dispersion cm3/: 3.50 1000H.: (5.50)

Remarks:

STARTING FUEL DELIVERY

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column : MB 6.0 C 2 : 13.05.87 Test sheet Edition Edition Superceeded Calibrating oil : ISO-4113 : 0 400 876 335 Combination no. Injection pump Pump designation : PES6A90D410RS2710 EP type number : 0 410 896 082 Governor Governor design. : RSV350...1200A1C1154 Governer no. : 0 420 232 468 Customer-spec. information Customer : DAIMLER-BENZ : OM 366 Engine 1st version kW : 74.0 Speed 1/min: 2400 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.00 Calibrating nozzle-holder assembly : 0 681 343 009 Opening pressure, bar : 172...175 Test inj. tubing : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values ____ START OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35

: (2.20...2.40)

Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1-5-3-6-2-4 C-rod trav.mm : 0.30...1.40 5th speed 1/min : 1255...1265 C-rod trav.mm : 8.30 LOWEST RATED SPEED I SD ang. spacing 0 CS: 0-60-120-180-240-300 Tolerance + - 0 : 0.50 (0.75) Control-lever position degrees: ? BASIC SETTING Testing: 1/min : 100 Speed C-rod trav.mm min : 19.50 Speed 1/min : 350 1/mi: 1200 1st speed Contr.-rod trav.mm: 9.30...9.40 C-rod trav.mm : 8.20...8.40 7m : 2.00 1/min : 465...525 C-rod trav.mm Del.quantity cm3/ : 4.8...4.9 Speed 100H.: (4.6...5.1) TORQUE CONTROL Torque-control curve - 1st ver soon 1st speed 1/min: 1200 C-rod trav.mm: 9.30...9.40 cm3/:0.3Dispersion 100H.: (0.4) 2nd speed 1/min: 600 C-rod trav.mm : 10.40...10.60 3rd speed 1/min: 800 2nd speed 1/min: 350.0 Contr.-rod trav. m: 8.0...8.6 C-rod trav.mm : 10.30...10.50 Del.quantity cm3/: 1.0...1.2 100H.: (0.8...1.4) 4th speed 1/min : 1000 C-rod trav.mm : 9.40...9.70 cm3/: 0.2 100H.: (0.4) Dispersion FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 600
Del.quantity cm3/: 41.0...43.0
1000H.: (38.5...45.5)
Speed 1/min: 900 SLEEVE POSITION Control-lever position Degree: -3 Del.quantity cm3/: 44.0...47.0 1000H.: (41.5...49.5) 17min: 800 Cont.-rod travelmm: 0.03...1.00 Governor-spring reload Notch setting x : 5.00 STARTING FUEL DELIVERY FULL-LOAD DELIV. AT FULL-LOAD STOP 1/min : 100 Speed Del.quantity cm3/: 78.0...88.0 1st version 1000H.: (75.0...91.0) Speed 1/min: 1200 Del.quantity cm3/: 48.0...49.0 1000H.: (46.0...51.0) Dispersion cm3/: 3.00 1000H.: (4.50) Contr.-rod trav.mm: 16.80...17.20 LOW IDLE Speed 1/min: 350 Contr.-rod trav.mm: 8.00...8.60 HIGHEST RATED SPEED Del.quantity cm3/: 10.0...12.0 1000H.: (8.0...14.0) 1st version Control-lever Dispersion cm3/: 2.50 position degrees: 59...67 1000H.: (4.50) Testing: 1st c-rod trav.mm : 8.30 Remarks: Speed 1/min: 1240...1245 APPLICATION 2nd c-rod trav.mm : 4.00 Unimog Speed 1/min: 1261...1274 3rd c-rod trav.mm : 4.00 Speed 1/min: 1300...1330 4th speed 1/min: 1400

H26

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column : MB 6.0 C 3 : 13.05.87 Test sheet Edition Superceeded : 12.9.86 Calibrating oil : ISO-4113 Combination no. : 0 400 876 336 Injection pump Pump designation : PES6A90D41DRS2710 EP type number : 0 410 896 082 Governor Governor design. : RSV350...1200A1C1154 -1L Governer no. : 0 420 232 470 Customer-spec. information : DAIMLER-BENZ : OM 366 Engine 1st version kW : 81.0 Speed 1/min: 2400 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar : 1.00 Calibrating nozzle-holder : 0 681 343 009 assembly Opening pressure, bar : 172...175 Test inj. tubing : 1 680 750 015 Outside diameter

Outside diameter x Wall thickness x Length mm

: 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

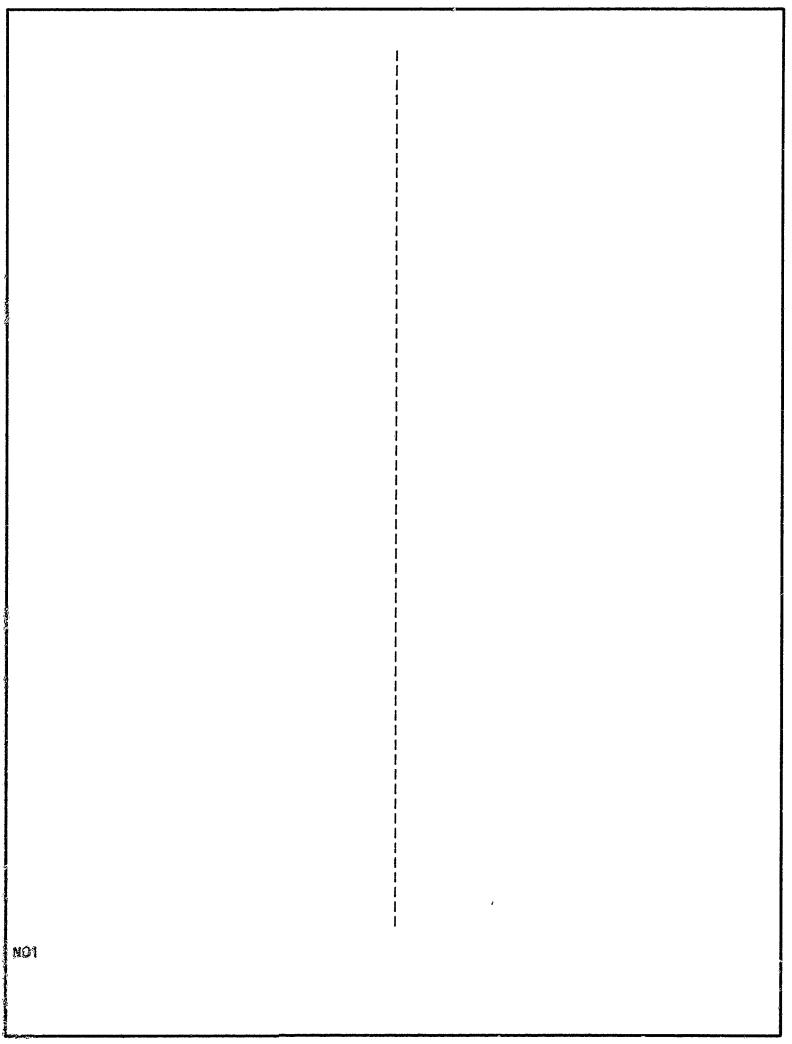
START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.25...2.35

Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1-5-3-6-2-4 C-rod trav.mm : 0.30...1.40 5th speed 1/min: 1250...1260 C-rod trav.mm : 8.80 LOWEST RATED SPEED I SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Control-lever position degrees: -3 Setting point w/out aux. spring BASIC SETTING Speed 1/min : 350 Contr.-rod trav.mm: 8.50 1/mi: 1200 1st speed Testing: Speed 1/min: 100 C-rod trav.mm min: 19.50 Speed 1/min: 350 Contr.-rod trav.mm: 9.80...9.90 Del.quantity cm3/ : 5.1...5.2 C-rod trav.mm : 8.40...8.60 C-rod trav.mm : 2.00 100H.: (4.9...5.4) : 2.00 Speed 1/min: 520...550 cm3/:0.3Dispersion TORQUE CONTROL Torque-control curve - 1st version 1st speed 1/min: 1200 C-rod trav.mm: 9.80...9.90 100H.: (0.4) 1/min: 350.0 2nd speed Contr.-rod trav. m: 8.4...8.6
Del.quantity cm3/: 1.0...1.2
100H.: (0.8...1.4) 2nd speed 1/min: 600 C-rod trav.mm : 11.30...11.40 3rd speed 1/min : 850 cm3/: 0.2 100H.: (0.4) Dispersion C-rod trav.mm : 11.10...11.30 4th speed 1/min: 950 C-rod trav.mm : 10.30...10.60 SLEEVE POSITION FUEL-DELIVERY CHARACTERISTICS Control-lever position Degree: -3 1/min: 800 Speed 1/min: 600 Del.quantity cm3/: 48.0...50.0 1000H.: (45.5...52.5) Cont.-rod travelmm: 0.30...1.00 1/min: 850 Speed Del.quantity cm3/: 49-0...52.0 1000H.: (46.5...54.5) Governor-spring reload Notch setting x : 5.00 FULL-LOAD DELIV. AT FULL-LOAD STOP STARTING FUEL DELIVERY 1st version 1/min: 1200 Speed Del.quantity cm3/: 51.0...52.0 1000H: (49.0...54.0) Dispersion cm3/: 3.00 1000H: (4.50) Speed 1/min : 100 Del.quantity cm3/: 78.0...88.0 1000H.: (75.0...91.0) LOW IDLE HIGHEST RATED SPEED Speed 1/min: 350 Contr.-rod trav_mm: 8.10...8.80 1st version Control-lever Del.quantity cm3/: 10.0...12.0 1000H.: (8.0...14.0) Dispersion cm3/: 2.50 1000H.: (84.50) position degrees: 59...67 Testing: 1st c-rod trav.mm : 8.80 Speed 1/min: 1240...1245 2nd c-rod trav.mm: 4.00 Remarks: Speed 1/min: 1262...1275 3rd c-rod trav.mm: 4,00 APPLICATION Unimog 1/min : 1305...1335 Speed 4th speed 1/min: 1400

M28



```
Note inst. in remarks column
Test sheet
Edition
Superceeded
                  : MB 5,7 V 19
                  : 10.04.87
Calibrating oil : ISO-4113
                  : 0 400 876 338
Combination no.
Injection pump
Pump designation : PES6A90D410RS2596
EP type number
                  : 0 410 896 073
Governor
                  : RSV300...1100A0C1148
Governor design.
                    -2L
Governer no.
                  : 0 420 232 477
Customer-spec. information
Customer
                  : DAIMLER-BENZ
                  : 0M352
Engine
1st version kW : 92.0
            1/min: 2200
Speed
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                  : 38...42
Overflow valve
                  : 1 417 413 000
Inlet press. bar: 1.00
Calibrating nozzle-holder
assembly : 0 681 343 009
Opening
pressure, bar : 172...175
Test inj. tubing : 1 680 750 014
Outside diameter
x Wall thickness
                  : 6.00x2.00x600
x Length mm
(A) Injection pump setting values
    Insp. values in parentheses
   Set constant delivery quant.
   per values ____
START OF DELIVERY
Test pressure, bar: 25...27
                  : 2.00...2.10
Prestroke mm
                  : (1.95...2.15)
```

BOSCH INJ. PUMP TEST SPECIFICATIONS

Contr.-rod trav.mm: 9.00...12.00 4th speed 1/min: 1350 Cam sequence : 1-5-3-6-2-4 C-rod trav.mm : 0.30...1.70 LOWEST RATED SPEED I Control-lever SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - 0.50 (0.75) position degrees: -3
Setting point w/out aux. spring
Speed 1/min: 300 BASIC SETTING Contr.-rod trav.mm: 8.20 1/mi: 1100 1st speed Testing: 1/min : 100 Speed Contr.-rod trav.mm: 10.90...11.00 C-rod trav.mm min: 19.50 Speed 1/min : 300 C-rod trav.mm : 8.10...8.30 C-rod trav.mm : 2.00 Speed 1/min : 470...530 Del.quantity cm3/ : 6.3...6.4 100H.: (6.1...6.6) Dispersion cm3/:0.3TORQUE CONTROL Torque-control curve - 1st version 100H.: (0.5) 1st speed 1/min : 1100 C-rod trav.mm : 10.90...11.00 2nd speed 1/min : 750 2nd speed 1/min: 300.0 C-rod trav.mm : 12.60...12.70 3rd speed 1/min : 1000 Contr.-rod trav. m: 8.1...8.3 Del.quantity cm3/: 0.8...1.4 100H.: (0.6...1.6) Dispersion cm3/: 0.2 100H.: (0.4) C-rod trav.mm : 11.50...11.70 compensator (LDA, ADA, ALDA) SLEEVE POSITION Control-lever position 1st version Degree: -3 Setting 17min: 800 Speed 1/min: 750 Pressure hPa: 700 Cont.-rod travelmm: 0.30...1.00 Contr.-rod trav.mm: 12.60...12.70 Governor-spring reload Notch setting x :? Measurement 1/min: 750 Speed FULL-LOAD DELIV. AT FULL-LOAD STOP 1st pressure hPa : -C-rod trav.mm : 11.80...11.90 1st version Speed 1/min: 1100 Charge press. hPa: 700 Del.quantity cm3/: 63.5...64.5 1000H.: (61.5...66.5) Dispersion cm3/: 3.00 2nd pressure hPa : 400 : 12.20...12.30 G-rod trav.mm FUEL-DELIVERY CHARACTERISTICS 1000H.: (5.00) 1st version Charge press. hPa: 700 Speed 1/min: 750
Del.quantity cm3/: 72.5...74.5
1000H.: (70.0...77.0) HIGHEST RATED SPEED 1st version Control-lever Charge press. hPa : position degrees: 44...52 1/min : -Speed Del.quantity cm3/: 67.0...69.0 Testing: 1000H.: (64.5...71.5) 1st c-rod trav.mm : 9.90 Charge press. hPa : -Speed 1/min: 1140...1150 2nd c-rod trav.mm : 4.00 1/min : 500 Speed Speed 1/min: 1190...1220 3rd c-rod trav.mm: 4.00 Del.quantity cm3/: 58.0...60.0 1000H:: (56.0...62.0) Speed 1/min: 1220...1250

NO3

STARTING FUEL DELIVERY

Speed 1/min : 100
Del.quantity cm3/ : 78.0...88.0

Remarks: Hydraulic latching of starting delivery.

Latching at 0.4 bar ... 0.5 bar.

Unlatching at 0.15 bar...0.25 bar.

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                   Contr.-rod trav.mm: 9.00...12.00
                                                    Cam sequence : 1-5-3-6-2-4
Note inst. in remarks column
Test sheet
                   : KHD 1 0 1
                                                   SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
                   : 22.05.87
Edition
Superceeded
Calibrating oil
                   : ISO-4113
                                                   BASIC SETTING
Combination no.
                   : 0 400 876 344
                                                    1st speed
                                                                  1/mi: 1250
Injection pump
                                                    Contr.-rod trav.mm: 11.60...11.70
Pump designation
                   : PES6A95D41ORS2625
EP type number
                   : 0 410 896 926
                                                   Del.quantity cm3/: 9.3...9.5
Governor
Governor design.
                   : RSV325...1250A2C1159
                                                                 100H.: (9.1...9.7)
                   : 0 420 232 490
Governer no.
                                                   Dispersion
                                                                 cm3/:0.3
Customer-spec. information
Customer
                                                                 100H.: (0.6)
                   : KHD
Engine
                   : BF6L913C
                                                   2nd speed
                                                                 1/min: 350.0
                                                   Contr.-rod trav. m: 6.4...6.6
                                                   Del.quantity cm3/: 1.0...1.6
1st version kW : 130.0
                                                                 100H.: (0.7...1.8)
             1/min: 2500
Speed
                                                                 cm3/: 0.3
                                                   Dispersion
                                                                 100H.: (0.5)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                                                   SLEEVE POSITION
                   : 38...42
                                                   Control-lever position
                                                                Degree: -3
1/min: 800
Overflow valve
                   : 1 417 413 000
                                                   Cont.-rod travelmm: 0.30...0.70
Inlet press., bar : 1.00
                                                   Governor-spring reload
                                                   Notch setting x : 4.25
Calibrating nozzle-holder
 assembly
            : 0 681 343 009
                                                   FULL-LOAD DELIV. AT FULL-LOAD STOP
                                                   1st version
Opening
 pressure, bar : 172...175
                                                   Speed
                                                                 1/min: 1250
                                                   Charge press. hPa : 900
                                                   Del.quantity cm3/: 93.0...95.0
                                                                1000H.: (91.0...97.0)
cm3/ : 3.50
1000H.: (6.00)
Test inj. tubing : 1 680 750 014
                                                   Dispersion
Outside diameter
x Wall thickness
                                                   HIGHEST RATED SPEED
                   : 6.00x2.00x600
x Length mm
                                                   1st version
                                                   Control-lever
(A) Injection pump setting values
    Insp. values in parentheses
                                                    position degrees: 47...55
    Set constant delivery quant.
    per values ____
                                                   Testing:
                                                   1st c-rod trav.mm : 10.60
Speed 1/min : 1290...1300
START OF DELIVERY
                                                   2nd c-rod trav.mm : 4.00
Test pressure, bar: 25...27
                                                              1/min : 1345...1375
                                                     Speed
                                                   3rd c-rod trav.mm : 4.00
Prestroke mm
                : 1.90...2.00
                   : (1.85...2.05)
                                                               1/min : 1355...1385
                                                     Speed
N<sub>0</sub>5
```

4th speed 1/min: 1520 C-rod trav.mm : 0.30...1.40 LOWEST RATED SPEED I Control-lever position degrees: 17...25 Setting point w/out aux. spring 1/min : 350 Contr.-rod trav.mm: 5.0 Testing: 1/min : 100 Speed C-rod traw.mm min : 19.50 1/min : 350 Speed C-rod trav.mm : 5.40...5.60 : 2.00 C-rod trav.mm 1/min : 520...580 Speed TORQUE CONTROL Dimension a mm : 0.40 Torque-control curve - 1st version 1st speed 1/min : 1250 C-rod trav.mm : 11.60...11.70 2nd speed 1/min: 500 C-rod trav.mm : 12.00...12.10 4th speed 1/min : 1105 C-rod trav.mm : 11.70...11.90 compensator (LDA_ADA_ALDA) 1st version Setting Speed 1/min : 500 hPa : 900 Pressure Contr.-rod trav.mm: 12.00...12.10 Measurement Speed 1/min: 500 1st pressure hPa : -C-rod trav.mm : 10.30...10.40 2nd pressure hPa : 540 C-rod trav.mm : 11.50...11.60 3rd pressure hPa : 420 C-rod trav.mm : 10.80...11.00 FUEL-DELIVERY CHARACTERISTICS Charge press. hPa: 900 1/min : 1000 Speed Del.quantity cm3/: 94.5...97.5 1000H.: (92.0...100.0)
Charge press. hPa : 900
Speed 1/min : 1150
Del.quantity cm3/ : 93.0...96.0 1000H.: (90.5...98.5)

Del.quantity cm3/: 54.0...56.0 1000H.: (52.0...58.0)

STARTING FUEL DELIVERY

1/min : 100 Speed

Del.quantity cm3/: 120.0...130.0 1000H.: (117.0...133.0) Contr.-rod trav.mm: 16.30...16.70

1 *******

APPLICATION

Combine-harvester

N₀6

Speed

Charge press. hPa : -

1/min : 500

```
: 1-5- 3- 6- 2- 4
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                        Cam sequence
Note inst. in remarks column
                                                        SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
Test sheet
                     : RAB 10,8 A
                    : 30.03.87
: 5.84
: ISO-4113
Edition
Superceeded
Calibrating oil
                                                        SD mark cyl. no. : 1
                    : 0 401 276 051
                                                        BASIC SETTING
Combination no.
                                                                        1/mi: 950
Injection pump
                                                        1st speed
Pump designation : PES6A100D410RS3039
                                                        Contr.-rod trav.mm: 13.60...13.70
EP type number
                     : 0 411 206 018
Governor
Governor design. : RSV475...950A1C2121L
Governer no. : 0 420 232 384
                                                        Del.quantity cm3/: 15.2...15.4
                                                                       100H.: (15.0...15.6)
Customer-spec. information
Customer
                    : RABA
                                                        Dispersion
                                                                       cm3/:0.3
Engine
                    : D2156 MKTL6
                                                                       190H.: (0.6)
1st version kW : 184.0
                                                        2nd speed
                                                                       1/min: 475.0
                                                        Contr.-rod trav. m: 5.9...6.1
               1/min: 1900
Speed
                                                       Del.quantity cm3/: 1.1...1.5
100H:: (0.9...1.8)
Dispersion cm3/: 0.3
100H:: (0.5)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                     : 38...42
                                                        SLEEVE POSITION
Overflow valve
                                                        Control-lever position
                     : 1 417 413 000
                                                                     Degree: -3
                                                                      17min: 800
                                                        Speed
                                                        Cont.-rod travelmm: 0.30.. 🛷
Inlet press., bar: 1.00
                                                        Governor-spring reload_
Calibrating nozzle-holder
 assembly
                   : 0 681 343 009
                                                        Notch setting x : 3.75
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
Opening
 pressure, bar : 172...175
                                                        1st version
                                                       Speed 1/min: 950
Charge press. hPa: 750
Del.quantity cm3/: 152.0...154.0
1000H.: (150.0...156.0)
Dispersion cm3/: 3.00
Test inj. tubing : 1 680 750 014
Outside diameter
x Wall thickness
                                                                     1000H.: (6.00)
                    : 6.00x2.00x600
x Length mm
                                                        HIGHEST RATED SPEED
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                        1st version
                                                        Control-lever
    per values ____
                                                         position degrees: 45...53
START OF DELIVERY
                                                        Testing:
Test pressure, bar: 25...27
                                                        1st c-rod trav.mm : 12.60
                                                                   1/min : 990...1000
                                                          Speed
                                                        2nd c-rod trav.mm : 4.00
Prestroke mm
                     : 1.60...1.70
                                                                    1/min : 1025...1055
                    : (1.55...1.75)
Contr.-rod trav.mm: 9.00...12.00
                                                        3rd c-rod trav.mm: 4.00
NO7
```

1/min : 1030...1060 1/min : 1195 Speed 4th speed C-rod trav.mm : 0.30...1.40 LOWEST RATED SPEED I Control-lever position degrees: 23...31 Setting point w/out aux. spring 1/min : 475 Speed ` Contr.-rod trav.mm: 5.5 Testing: Speed 1/min : 100 C-rod trav.mm min : 19.50 Speed 1/min : 475 : 5.90...6.10 C-rod trav.mm : 2.00 C-rod trav.mm 1/min : 570...630 Speed 1/min : 675 Speed C-rod trav.mm max: 1.00 TORQUE CONTROL Torque-control curve - 1st version 1/min : 950 1st speed C-rod trav.mm : 13.60...13.70 1/min : 500 2nd speed C-rod trav.mm : 15.70...15.80 3rd speed 1/min: 840 C-rod trav.mm : 14.90...15.10 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 Speed hPa : 750 Pressure Contr.-rod trav.mm: 15.70...15.80 Measurement 1/min : 500 Speed 1st pressure hPa : -C-rod trav.mm : 13.40...13.50 2nd pressure hPa : 550 C-rod trav.mm : 15.00...15.10 3rd pressure hPa : 420 C-rod trav.mm : 14.10...14.30 FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa: 750 Speed 1/min: 750
Del.quantity cm3/: 180.0...184.0
1000H.: (178.0...186.0) Charge press. hPa : -1/min : 500 Speed Del.quantity cm3/: 0.0...149.0

1000H.: (0.0...151.0)

NO8

Remarks: APPLICATION Tractor (tractor engines)

SD ang. spacing $^{\circ}$ CS: 0-60-120-180-240-300 Tolerance + - $^{\circ}$: 0.5(0.75) BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column SD mark cyl. no. : 1 : VOL 7,1 A 4 Test sheet : 6.87 Edition BASIC SETTING : 11.86 Superceeded Calibrating oil : ISO-4113 1/mi: 700 1st speed Combination no. : 0 401 846 505 E Contr.-rod trav.mm: 11.20...11.30 Injection pump Del.quantity cm3/: 10.1...10.3 Pump designation : PE6P110A32ORS483E 100H.: (9.8...10.6) EP type number : 0 411 816 159 Governor Governor design. : RQV250...1100PA499-1 Dispersion cm3/:0.4100H.: (0.75) Customer-spec. information : VOLVO Customer 2nd speed 1/min: 250 Centr.-rod trav. m: 5.30...5.50 Del.quantity cm3/: 1.6...2.0 100H.: (-) Engine : TD 71 TEST BENCH REQUIREMENTS Dispersion cm3/:0.3Calibrating-oil inlet temp. °C 100H.: (0.6) : 38...42 SLEEVE POSITION Control-lever position Overflow valve Degree: -1 Speed 1/min: 1200 Cont.-rod travelmm: 15.20...17.80 : 1 417 413 025 Inlet press., bar : 1.50 FULL-LOAD DELIV. AT FULL-LOAD STOP Calibrating nozzle-holder : 0 681 343 009 assembly 1st version 1/min: 700 Opening Speed Charge press. hPa: 900
Del.quantity cm3/: 101.0...103.0
1000H.: (98.0...106.0)
Dispersion cm3/: 4.0 pressure, bar : 172...175 Test in . tubing : 1 680 750 015 1000H.: (7.5) Outside diameter x Wall thickness HIGHEST RATED SPEED : 6,00x1,50x600 x Length mm 1st version Control-lever (A) Injection pump setting values position degrees: 54...62 Insp. values in parentheses Set constant delivery quant. Testing: per values ____ 1st c-rod trav.mm : 10.20 1/min : 1160...1170 Speed 2nd c-rod trav.mm : 4.00 START OF DELIVERY 1/min : 1260...1290 Speed Test pressure, bar: 25...27 1/min : 1400 4th speed : 3.00...3.10 : (2.95...3.15) C-rod trav.mm : 0.00...1.00 Prestroke mm Contr.-rod trav.mm: 9.00...12.00 LOWEST RATED SPEED I Cam sequence : 1-5-3-6-2-4 Control-lever position degrees: 5...13 Testing: N09

```
Speed
              1/min : 100
C-rod trav.mm min: 6.80
             1/min : 250
mm : 5.30...5.50
Speed
C-rod trav.mm
CONSTANT REGULATION
              1/min: 300...410
Speed
 compensator (LDA, ADA, ALDA)
1st version
Setting
              1/min : 500
Speed
            hPa : 900
Pressure
Contr.-rod trav.mm: 11.20...11.30
Measurement
              1/min : 500
Speed
1st pressure hPa : -
                     : 8.70...8.90
  C-rod trav.mm
2nd pressure hPa : 560
C-rod trav.mm : 11.0...11.1
3rd pressure hPa : 290
                    : 9.1...9.3
  C-rod trav.mm
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa : 900
Speed 1/min: 1000
Del.quantity cm3/: 110.0...114.0
              1000H.: (107.0...117.0)
Charge press. hPa : -
              1/min : 700
Speed
Del.quantity cm3/: 68.0...70.0
1000H.: (65.0...73.0)
STARTING FUEL DELIVERY
Speed
              1/min : 100
Del.quantity cm3/: 170.0...200.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00
LOW IDLE
              1/min : 250
Speed
Contr.-rod trav.mm: 5.30...5.50
Del.quantity cm3/ : 16.0...20.0
              1000H.: (-)
              cm3/: 3.0
1000H.: (6.0)
Dispersion
Remarks:
Delivery-valve spring pre-tension =
2.40...2.60 mm.
N10
```

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS

Note inst. in remarks column

Test sheet Edition Superceeded : VOL 140 S : 12.06.87

Calibrating oil : ISO-4113

Combination no. : 0 401 846 529

Injection pump

Pump designation : PE6P120A320RS3186

EP type number : 0 411 826 756 Governor

Governor design. : RQV250..1025PA657-13 Governer no. : 0 421 813 592

Customer-spec. information Customer : VOLVO

: TD102F Engine

1st version kW : 220.0 Speed 1/min: 2050

TEST BENCH REQUIREMENTS

Calibrating-oil inlet temp. OC : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Calibrating nozzle-holder

assembly : 1 688 901 019

Opening pressure, bar : 207...210

Perforated-plate

: 0,8 diameter mm

Test inj. tubing : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. per values

START OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm Del.quantity cm3/: 197.0...199.0 : 2.60...2.70 1000H:: (194.0...202.0) cm3/: 5.00 : (2.55...2.75) Contr.-rod trav.mm: 9.00...12.00 Dispersion Cam sequence : 1-5-3-6-2-4 1000H.: (9.00) HIGHEST RATED SPEED 1st version SD ang. spacing $^{\circ}$ CS: 0-60-120-180-240-300 Tolerance + - $^{\circ}$: 0.50 (0.75) Control-lever position degrees: 58...66 SD mark cyl. no. : 1 Testing: 1st c-rod trav.mm : 10.40 BASIC SETTING Speed 1/min: 1055...1065 2nd c-rod trav.mm: 4.00 Speed 1/min: 1110...1140 th speed 1/min: 1250 C-rod trav.mm: 0.00...1.00 1st speed 1/mi: 700 4th speed Contr.-rod trav.mm: 11.40...11.50 Del.quantity cm3/ : 19.7...19.9 LOWEST RATED SPEED I Control-lever 100H.: (19.4...20.2) position degrees: 4..12 Dispersion cm3/:0.5Testing: Speed 1/min: 100 C-rod trav.mm min: 5.40 Speed 1/min: 250 100H.: (0.9) 2nd speed 1/min: 250.0 Contr.-rod trav. m: 3.9...4.1 Del.quantity cm3/: 1.7...2.2 100H.: (1.4...2.4) Dispersion cm3/: 0.5 100H.: (0.7) C-rod trav.mm : 3.90...4.10 CONSTANT REGULATION Speed 1/min : 250...350 compensator (LDA, ADA, ALDA) (B) Setting of injection pump with externally-mounted governor 1st version Setting 1/min : 500 SLEEVE TRAVELS Speed 1st speed 1/min: 250
 Sleeve travel mm: 1.20...1.30
2nd speed 1/min: 430
 Sleeve travel mm: 3.50...3.80
3rd speed 1/min: 700 hPa : 1000 Pressure Contr.-rod trav.mm: 11.40...11.50 Measurement 1/min : 500 Speed Sleeve travel mm: 6.40...6.60 4th speed 1/min: 900 1st pressure hPa : -C-rod trav.mm : 8.90...9.10 Sleeve travel mm: 6.40...6.60 5th speed 1/min: 1080 Sleeve travel mm: 8.30...8.50 2nd pressure hPa : 770 C-rod trav.mm : 11.20...11.30 3rd pressure hPa : 420 SLEEVE POSITION C-rod trav.mm : 9.40...9.60 Control-lever position FUEL-DELIVERY CHARACTERISTICS Degree: -1 17min: 1080 Charge press. hPa : -1/min : 700 Cont.-rod travelmm: 15.20...17.80 Speed Del.quantity cm3/: 149.0...151.0 1000H.: (146.0...154.0) FULL-LOAD DELIV. AT FULL-LOAD STOP LOW IDLE 1st version Speed 1/min: 700 Charge press. hPa: 1000 Speed 1/min : 250 Contr.-rod trav.mm: 3.90...4.90

Del.quantity cm3/: 17.0...22.0 1000H:: (14.5...24.5) Dispersion cm3/: 5.00 1000H:: (7.00)

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                         SD ang. spacing<sup>0</sup>CS: 0-60-120-180-240-300
Tolerance + - : 0.50 (0.75)
Test sheet
                     : DAF 11.6 X2
: 10.04.87
Superceeded
                                                         BASIC SETTING
Calibrating oil : ISO-4113
                                                         1st speed
                                                                         1/mi: 600
                    : 0 401 846 540
Combination no.
                                                         Contr.-rod trav.mm: 12.80...12.90
Injection pump
Pump designation : PE6P110A320RS407-1
                                                         Del.quantity cm3/: 15.3...15.5
EP type number : 0 411 816 147
                                                                        100H.: (15.0...15.7)
Governor
Governor design. : RQ275/1000PA861
Governer no. : 0 421 801 397
                                                         Dispersion
                                                                        cm3/:0.4
                                                                        100H.: (0.7)
Customer-spec. information
Customer
                    : DAF
                                                        2nd speed 1/min: 275.0
Contr.-rod trav. m: 7.2...7.4
Del.quantity cm3/: 1.4...1.9
100H.: (1.1...2.1)
                     : LT 195
Engine
1st version kW
                   : 195.0
                                                                        cm3/:0.4
                                                         Dispersion
TEST BENCH REQUIREMENTS
                                                                        100H.: (0.7)
Calibrating-oil inlet temp. °C
                                                         SLEEVE POSITION
                     : 38...42
                                                        Control-lever position
                                                                      Degree: -1
1/min: 600
Overflow valve
                     : 1 417 413 025
                                                         Cont.-rod travelmm: 15.40...16.60
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
Inlet press., bar : 1.50
Calibrating nozzl@-holder
                                                         1st version
             : 0 681 343 009
                                                                        1/min: 600
 assembly
                                                         Speed
                                                        Charge press. hpa: 700
Del.quantity cm3/: 153.0...155.0
1000H.: (150.5...157.5)
Dispersion cm3/: 4.00
Opening
 pressure, bar : 172...175
                                                                       1000H.: (7.50)
Test inj. tubing : 1 680 750 015
                                                        HIGHEST RATED SPEED
Outside diameter
x Wall thickness
                                                         Setting point:
x Length mm
                   : 6.00x1.50x600
                                                        Speed
                                                                   1/min : 600
                                                        Contr.-rod trav.mm: $6.0
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                         Testing:
                                                        1st c-rod trav.mm : 11.40
                                                        Speed 1/min: 1030...1045
2nd c-rod trav.mm: 4.00
Speed 1/min: 1100...1130
4th speed 1/min: 1300
    per values
START OF DELIVERY
Test pressure, bar: 25...27
                                                           C-rod trav.mm : 0.00...1.00
                     : 2.80...2.90
Prestroke mm
                     : (2.75...2.95)
                                                        LOWEST RATED SPEED I
Contr.-rod trav.@m: 9.00...12.00
                                                        Control-lever
Cam sequence : 1-5-3-6-2-4
                                                          position degrees: 73...81
N14
```

```
Setting point w/out aux. spring
Speed 1/min : 275
Contr.-rod trav.mm: 7.3
Testing:
            1/min : 100
Speed
C-rod trav.mm min: 8.40
Speed
            1/min : 275
C-rod trav.mm
                  : 7.20...7.40
C-rod trav.mm
                   : 2.50
            1/min: 340...380
Speed
TORQUE CONTROL
Dimension a mm : 0.25
Torque-control curve - 1st version
           1/min : 600
1st speed
  C-rod trav.mm : 13.00...13.10
2nd speed 1/min : 980
  C-rod trav.mm : 12.40...12.60
3rd speed 1/min: 900
  C-rod travemm
                   : 12.50...12.80
 compensator (LDA, ADA, ALDA)
1st version
Setting
Speed
            1/min : 600
            hPa : 700
Pressure
Contr.-rod trav.mm: 12.80...12.90
Measurement
Speed
            1/min : 600
  C-rod trav.mm : 11.70...11.90
2nd pressure hPa : 340
 C-rod tray.mm
                   : 12.50...12.60
3rd pressure hPa
                   : 310
  C-rod trav.mm
                   : 12.10...12.30
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa : 700
Speed 1/min : 980
Speed 1/min: 980
Del.quantity cm3/: 145.5...149.5
1000H.: (142.5...152.5)
            1/min : 600
Speed
Del.quantity cm3/: 130.0...132.0
            1000H.: (127.5...134.5)
STARTING FUEL DELIVERY
            1/min : 100
Speed
Del.quantity cm3/: 245.0...285.0
            1000H.: (241.0...289.0)
Contr.-rod trav.mm: 19.50...21.00
LOW IDLE
N15
```

Speed 1/min: 275 Contr.-rod trav.mm: 7.20...7.40 Del.quantity cm3/: 14.0...19.0 1000H.: (11.5...21.5) Dispersion cm3/: 4.50 1000H.: (7.50)

Remarks: On activation of the starting solenoid, the start position must be reached.

```
Cam sequence : 1-5-3-6-2-4
BOSCH INJ. PUMP TEST SPECIFICATIONS
Note inst. in remarks column
                                                        SD ang. spacing ^{0}CS: 0-60-120-180-240-300 Tolerance + - ^{0}: 0.50 (0.75)
Test sheet
                     : DAF 11,6 X3
                     : 02.06.87
Edition
Superceeded
                                                        BASIC SETTING
Calibrating oil : ISO-4113
Combination no.
                    : 0 401 846 541
                                                                    1/mi: 600
                                                        1st speed
                                                        Contr.-rod trav.mm: 12.90...13.00
Injection pump
Pump designation : PE6P110A320RS407-1
                                                        Del.quantity cm3/: 15.5...15.7
EP type number
                    : 0 411 816 147
Governor
Governor design. : RQ275/1100PA864
                                                                       100H.: (15.2...15.9)
Governer no. : 0 421 801 400
                                                                       cm3/:0.4
                                                        Dispersion
Customer-spec. information
                                                                       100H.: (0.7)
Customer
                                                        2nd speed 1/min: 275.0

Contr.-rod trav. m: 7.2...7.4

Del.quantity cm3/: 1.4...1.9

100H.: (1.1...2.1)

Dispersion cm3/: 0.4
Engine
                    : LT 210
1st version kW : 210.0
Speed
               1/min: 2200
                                                                       100H.: (0.7)
TEST BENCH EQUIREMENTS
Calibrating-oil inlet temp. C
                                                        SLEEVE POSITION
                    : 38...42
                                                        Control-lever position
                                                                      Degree: -1
1/min: 600
Overflow valve
                                                        Speed
                     : 1 417 413 025
                                                        Cont.-rod travelmm: 15.20...16.40
                                                        FULL-LOAD DELIV. AT FULL-LOAD STOP
Inlet press., bar: 1.50
                                                        1st version
Calibrating nozzle-holder
                                                        Speed 1/min: 600
Charge press. hPa: 700
Del.quantity cm3/: 155.0...157.0
1000H.: (152.5...159.5)
Dispersion cm3/: 4.00
 assembly
                    : 0 681 343 009
Opening
 pressure, bar
                   : 172...175
                                                                      1000H.: (7.50)
Test inj. tubing
                   : 1 680 750 015
                                                        HIGHEST RATED SPEED
Outside diameter
x Wall thickness
                                                        Setting point:
                                                                     1/min : 600
x Length mm
                   : 6.00x1.50x600
                                                        Contr.-rod trav.mm: 15.8
(A) Injection pump setting values
    Insp. values in parentheses
Set constant delivery quant.
                                                        Testing:
                                                        1st c-rod trav.mm : 11.50
                                                          Speed 1/min: 1135...1150
    per values ____
                                                        2nd c-rod trav.mm : 4.00
                                                          Speed 1/min: 1180...1210
th speed 1/min: 1300
START OF DELIVERY
                                                        4th speed
Test pressure, bar: 25...27
                                                          C-rod trav.mm : 0.00...1.00
Prestroke mm
                     : 2.80...2.90
                     : (2.75...2.95)
                                                        LOWEST RATED SPEED I
Contr.-rod trav.mm: 9.00...12.00
                                                        Setting point w/out aux. spring
N16
```

Speed 1/min : 275 Contr.-rod trav.mm: 7.3 Testing: Speed 1/min : 100 C-rod trav.mm min: 8.40 Speed 1/min: 275 C-rod trav.mm: 7.20...7.40 C-rod trav.mm: 2.00 1/min : 350...390 Speed TORQUE CONTROL Dimension a mm : 0.25 Torque-control curve - 1st version 1st speed 1/min: 600 C-rod trav.mm : 13.10...13.20 2nd speed 1/min : 1080 C-rod trav.mm : 12.50...12.70 3rd speed 1/min: 850 C-rod trav.mm : 12.80...12.90 compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 600 Speed hPa : 700 Pressure Contr.-rod trav.mm: 12.90...13.00 Measurement Speed 1/min: 600 1st pressure hPa : -C-rod trav.mm : 11.70...11.90 2nd pressure hPa : 310 C-rod trav.mm : 12.60...12.70 3rd pressure hPa : 270 C-rod trav.mm : 12.10...12.30 FUEL-DELIVERY CHARACTERISTICS 1st version Charge press. hPa: 700 1/min : 1080 Speed Del.quantity cm3/: 147.0...151.0 1000H.: (144.0...154.0) Charge press. hPa : -Speed 1/min: 600 Del.quantity cm3/: 130.0...132.0 1000H.: (127.5...134.5) STARTING FUEL DELIVERY Speed 1/min: 100 Del.quantity cm3/: 245.0...285.0 1000H.: (241.0...289.0) Contr.-rod trav.mm: 19.50...21.00

N17

LOW IDLE

Speed 1/min: 275 Contr.-rod trav.mm: 7.20...7.40 Del.quantity cm3/: 14.0...19.0 1000H.: (11.5...21.5) Dispersion cm3/: 4.50 1000H.: (7.50)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                                         : 1-5-3-6-2-4
                                                      Cam sequence
Note inst. in remarks column
                                                      SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75)
                    : DAF 11.6M14
: 02.06.87
Test sheet
Edition
Superceeded
Calibrating oil : ISO-4113
                                                      BASIC SETTING
                    : 0 401 846 542
                                                                    1/mi: 600
Combination no.
                                                      1st speed
Injection pump
                                                      Contr.-rod trav.mm: 11.40...11.50
Pump designation : PE6P100A320RS384-1
                                                      Del.quantity cm3/: 9.8...10.0
EP type number
                   : 0 411 806 189
Governor
Governor design. : RQ225/1000PA868
                                                                    100H.: (9.6...10.2)
Governer no.
                    : 0 421 801 403
                                                                    cm3/:0.3
                                                      Dispersion
Customer-spec. information
Customer
                   : DAF
                                                                    100H.: (0.6)
                                                     2nd speed 1/min: 250.0
Contr.-rod trav. m: 7.5...7.7
Del.quantity cm3/: 0.9...1.3
100H.: (0.6...1.5)
                    : DKDL 1160 SB 220
Engine
1st version kW : 220.0
Speed
              1/min: 2000
                                                                    cm3/:0.3
                                                      Dispersion
                                                                    100H.: (0.5)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. °C
                                                      SLEEVE POSITION
                    : 38...42
                                                      Control-lever position
                                                                   Degree: -1
1/min: 550
Overflow valve
                                                      Speed
                    : 1 417 413 025
                                                      Cont.-rod travelmm: 15.20...16.40
Inlet press., bar: 1.50
                                                      FULL-LOAD DELIV. AT FULL-LOAD STOP
Calibrating nozzle-holder
                                                      1st version
                   : 0 681 343 009
 assembly
                                                                    1/min: 600
                                                      Speed
                                                     Del.quantity cm3/: 98.0...100.0
1000H:: (96.0...102.0)
Dispersion cm3/: 3.50
Opening
 pressure, bar
                   : 172...175
                                                                   1000H.: (6.00)
Test inj. tubing : 1 680 750 015
                                                      HIGHEST RATED SPEED
Outside diameter
                                                      Setting point:
                                                                  1/min : 550
x Wall thickness
                                                      Speed
                   : 6.00x1.50x600
                                                      Contr.-rod trav.mm: 15.8
x Length mm
                                                      Testing:
(A) Injection pump setting values
                                                      1st c-rod trav.mm : 9.60
    Insp. values in parentheses
    Set constant delivery quant.
                                                        Speed
                                                                1/min : 1045...1060
                                                      2nd c-rod trav.mm: 4.00
    per values ____
                                                                 1/min : 1100...1130
1/min : 1250
                                                        Speed
START OF DELIVERY
                                                      4th speed
                                                        C-rod trav.mm : 0.00...1.00
Test pressure, bar: 25...27
                    : 3.20...3.30
                                                     LOWEST RATED SPEED I
Prestroke mm
                    : (3.15...3.35)
                                                      Setting point w/out aux. spring
Contr.-rod trav.mm: 9.00...12.00
                                                      Speed
                                                                1/min : 250
N18
```

```
Contr.-rod trav.mm: 7.6
Testing:
              1/min : 100
Speed
C-rod trav.mm min: 8.40
Speed 1/min: 250
C-rod trav.mm: 7.50...7.70
                   : 2.00
C-rod trav.mm
              1/min : 345...385
Speed
TORQUE CONTROL
Torque-control curve - 1st version
1st speed 1/min : 600
C-rod trav.mm : 11.40...11.50
2nd speed 1/min : 1000
  C-rod trav.mm : 10.60...10.80
3rd speed 1/min : 820
  C-rod trav.mm : 11.20...11.40
4th speed 1/min: 900
  C-rod trav.mm : 10.80...11.10
FUEL-DELIVERY CHARACTERISTICS
Speed
             1/min : 1000
Del.quantity cm3/: 93.0...97.0
              1000H.: (90.5...99.5)
STARTING FUEL DELIVERY
              1/min : 100
Speed
Del.quantity cm3/: 180.0...220.0
1000H.: (176.0...224.0)
Contr.-rod trav.mm: 19.50...21.00
LOW IDLE
Speed 1/min: 250
Contr.-rod trav.mm: 7.50...7.70
Del.quantity cm3/: 9.0...13.0
1000H.: (6.5...15.5)
Dispersion cm3/: 3.50
1000H.: (5.50)
Remarks:
```

BOSCH INJ. PUMP TEST SPECIFICATIONS Note inst. in remarks column Test sheet Edition Superceeded : SCA 11.0 R5 : 30.03.87 SD mark cyl. no. : 1 : 1.83 BASIC SETTING Calibrating oil : ISO-4113 1/mi: 600 1st speed Combination no. : 0 401 846 734 Contr.-rod trav.mm: 13.60...13.70 Injection pump Pump designation : PE6P110A720RS3040 Del.quantity cm3/: 17.5...17.7 EP type number : 0 411 816 713 100H.: (17.3...17.9) Governor Governor design. : RQV200...1000PA555 Governer no. : 0 421 813 280 Dispersion cm3/:0.6100H.: (0.8) Customer-spec. information Customer : SCANTA 1/min: 225.0 2nd speed Contr.-rod trav. m: 4.4...4.6
Del.quantity cm3/: 1.7...2.1
100H.: (-)
Dispersion cm3/: 0.2
100H.: (0.4) Engine : DS11 14 TEST BENCH REQUIREMENTS Calibrating-oil inlet temp. °C : 38...42 SLEEVE POSITION Overflow valve Control-lever position : 1 417 413 025 Degree: -1 Speed 17min: 1050 Cont.-rod travelmm: 15.20...17.80 Inlet press., bar: 1.50 FULL-LOAD DELIV. AT FULL-LOAD STOP Calibrating nozzle-holder : 0 681 343 009 assembly 1st version 1/min: 600 Opening Speed Charge press. hPa: 700
Del.quantity cm3/: 175.0...177.0
1000H.: (173.0...179.0)
Dispersion cm3/: 6.00 pressure, bar : 172...175 Test inj. tubing : 1 680 750 015 1000H.: (8.00) Outside diameter HIGHEST RATED SPEED x Wall thickness : 6.00x1.50x600 x Length mm 1st version Control-lever (A) Injection pump setting values position degrees: 56...64 Insp. values in parentheses Set constant delivery quant. Testing: per values ____ 1st c-rod trav.mm : 12.60 Speed 1/min: 1040...1050 START OF DELIVERY 2nd c-rod trav.mm : 4.00 Speed 1/min: 1150...1180 Test pressure, bar: 25...27 4th speed 1/min: 1300 : 3.30...3.40 : (3.25...3.45) C-rod trav.mm : 0.00...1.00 Prestroke mm LOWEST RATED SPEED I Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1-5-3-6-2-4 Control-lever position degrees: 5...13

```
Testing:
             1/min : 100
Speed
C-rod trav.mm min : 5.90
            1/min : 225
Speed
C-rod trav.mm : 4.40...4.60
                    : 2.00
C-rod trav.mm
            1/min : 320...380
Speed
 compensator (LDA,ADA,ALDA)
1st version
Setting
             1/min : 500
Speed
Pressure
             hPa : 700
Contr.-rod trav.mm: 13.60...13.70
Measurement
Speed 1/min: 500
1st pressure hPa : -
  C-rod trav.mm : 11.70...11.80
2nd pressure hPa : 410
  C-rod trav.mm : 13.20...13.30
3rd pressure hPa : 260
                   : 12.20...12.40
  C-rod trav.mm
FUEL-DELIVERY CHARACTERISTICS
1st version
Charge press. hPa: 700
             1/min : 1000
Del.quantity cm3/ : 169.5...174.5
             1000H.: (167.0...177.0)
Charge press. hPa : -
Speed 1/min: 500
Del.quantity cm3/: 127.0...131.0
1000H.: (125.0...133.0)
STARTING FUEL DELIVERY
             1/min : 100
Speed
Del.quantity cm3/: 240.0...290.0
1000H.: (-)
Contr.-rod trav.mm: 20.00...21.00
LOW IDLE
             1/min : 225
Speed
Contr.-rod trav.mm: 4.40...4.60
Del.quantity cm3/: 17.0...21.0
Dispersion cm3/: 2.00
1000H.: (4.00)
Remarks:
ADDITIONAL INFORMATION
```

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Start of delivery - engine: 20° before TDC Firing sequence of engine: 1-5-3-6-2-4.

Scania test specifications taken over on Aug. 30, 1984

```
BOSCH INJ. PUMP TEST SPECIFICATIONS
                                                               Test pressure, bar: 25...27
Note inst. in remarks column
                                                                                      : 4.00...4.10
                                                               Prestroke mm
                                                                                      : (3.95...4.15)
Test sheet : MB 11.0 M
Edition : 21.5.87
Superceeded : 12.9.86
Calibrating oil : ISO-4113
                                                               Contr.-rod trav.mm: 9.00...12.00
                                                               Cam sequence : 6- 3- 5- 2- 4- 1
                                                               SD ang. spacing CS: 0-45-120-165-240-285 Tolerance + - 0.50 (0.75)
                      : 0 401 846 741
Combination no.
Injection pump
Pump designation : PE6P110A320 $3814
EP type number : 0 411 816 721
                                                               SD mark cyl. no. : 6
                                                               BASIC SETTING
Governor
Governor design. : RQV350...1150PA378R
Governer no. : 0 421 813 294
                                                                              1/mi: 1150
                                                               1st speed
                                                               Contr.-rod trav.mm: 12.70...12.80
Customer-spec. information
Customer
                      : DAIMLER-BENZ
                                                               Del.quantity cm3/: 13.4...13.6
                       : 0M421
Engine
                                                                                100H.: (13.1...13.8)
1st version kW : 159.0
Speed 1/min: 2300
2nd version kW : 159.0
                                                               Dispersion
                                                                               cm3/:0.4
                1/min: 2300
                                                                                100H.: (0.8)
Speed
                                                              2nd speed 1/min: 350

Contr.-rod trav. m: 8.2...8.4

Del.quantity cm3/: 1.3...1.9

100H.: (1.0...2.1)

Dispersion cm3/: 0.4

100H.: (0.8)
TEST BENCH REQUIREMENTS
Calibrating-oil inlet temp. OC
                       : 38...42
Overflow valve
                       : 1 417 413 025
                                                               1st speed
                                                                               1/min: 1130
                                                              Contr.-rod trav.mm: 12.7...12.8
Del.quantity cm3/: 12.3...12.5
100H.: (-)
Dispersion cm3/: 0.4
100H.: (0.7)
2nd speed 1/min: 350
Inlet press., bar: 1.50
Overflow
 quantity min. 1/h: 100...110
Calibrating nozzle-holder
                                                               Contr.-rod trav.mm: 8.20...8.40
 assembly : 0 681 343 009
                                                               Del.quantity cm3/: 1.3...1.9
                                                                               100H.: (-)
cm3/: 0.4
100H.: (0.7)
Opening
 pressure, bar : 172...175
                                                               Dispersion
Test inj. tubing : 1 680 750 015
                                                               (B) Setting of injection pump with
                                                                    externally-mounted governor
Outside diameter
x Wall thickness
                                                               SLEEVE TRAVELS
                                                              1st speed 1/min: 300
Sleeve travel mm: 0.60...0.90
2nd speed 1/min: 580
Sleeve travel mm: 3.60...3.70
x Length mm
                       : 6,00x1,50x600
(A) Injection pump setting values
     Insp. values in parentheses
     Set constant delivery quant.
                                                               3rd speed 1/min: 870
    per values ____
                                                                 Sleeve travel mm: 5.20...5.30
                                                               4th speed 1/min: 1150
START OF DELIVERY
                                                                 Sleeve travel mm: 7.60
                        N22
```

```
SLEEVE POSITION
Control-lever position
             Degree: -1
              1/min: 1150
Speed
Cont.-rod travelmm: 15.20...17.80
FULL-LOAD DELIV. AT FULL-LOAD STOP
1st version
              1/min: 1150
Speed
Del.quantity cm3/: 134.0..136.0
             1000H.: (131.5...138.5)
cn3/: 4.00
1000H.: (8.00)
Dispersion
2nd version
              1/min: 1130
Speed
Del.quantity cm3/: 123.0...125.0
             1000H.: (120.0...128.0)
cm3/ : 4.0
Dispersion
             1000H.: (8.0)
HIGHEST RATED SPEED
1st version
Control-lever
 position degrees: 62...70
Testing:
1st c-rod trav.mm : 11.70
Speed 1/min: 1180...1190
2nd c-rod trav.mm: 4.00
            1/min : 1285...1315
  Speed
3rd c-rod trav.mm: 1400
            1/min : 0.00...,1.00
  Speed
2nd version
Control-lever
 position degrees: 62...70
Testing:
1st c-rod trav.mm : 11.70
            1/min : 1180...1190
  Speed
2nd c-rod trav.mm : 4.00
            1/min: 1285...1315
  Speed
3rd c-rod trav.mm : 1400
             1/min: 0.00...1.00
  Speed
LOWEST RATED SPEED I
Control-lever
 position degrees: 12...20
Testing:
             1/min : 100
Speed
C-rod trav.mm min: 0.50
Speed 1/min: 350
                   : 8.20...8.40
C-rod trav.mm
CONSTANT REGULATION
             1/min: 375...485
Speed
```

SWITCH-OVER POINT 1/min : 270 (290) Speed FUEL-DELIVERY CHARACTERISTICS Speed 1/min: 600 Del.quantity cm3/: 113.0...117.0 1000H.: (110.0...120.0) cm3/: 6.00 1000H.: (9.00) Dispersion 1/min : 1150 Speed Del.quantity cm3/: 93.0...97.0 * 1000H.: (90.0...100.0) cm3/: 6.00 1000H.: (9.00) Dispersion 1/min: Speed Del.quantity cm3/: -1000H.: (-) Remarks: Version 1: Without return-flow

BOSCH INJ. PUMP TEST SPECIFICATIONS SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Note inst. in remarks column Test sheet : VOL 10,0 0 SD mark cyl. no. : 1 : 12.06.87 Edition Superceeded : 12.9.86 BASIC SETTING Calibrating oil : ISO-4113 1/mi: 700 1st speed Combination no. : 0 401 846 745 Contr.-rod trav.mm: 12.30...12.40 Injection pump Del.quantity cm3/: 16.7...16.9 Pump designation : PE6P110A320R\$3080 Ef type number : 0 411 816 722 100H.: (16.4...17.2) Governor Governor design.: RQV250...1100PA589 Governer no. : 0 421 813 307 Dispersion cm3/:0.4100H.: (0.7) Customer-spec. information Customer : VOLVO 2nd speed 1/min: 250.0 Contr.-rod trav. m: 3.8...4.0 Del.quantity cm3/: 1.5...1.9 Engine : TD100GA 100H.: (1.2...2.1) cm3/: 0.3 TEST BENCH REQUIREMENTS Dispersion Calibrating-oil inlet temp. °C 100H.: (0.6) inlet temp. ' : 38...42 (B) Setting of injection pump with Overflow valve externally-mounted governor : 1 417 413 025 SLEEVE TRAVELS 1st speed 1/min: 250 Inlet press., bar : 1.50 Sleeve travel mm: 1.20...1.30 Calibrating nozzle-holder 2nd speed 1/min: 370 Sleeve travel mm: 2.60...3.00

3rd speed 1/min: 430

Sleeve travel mm: 3.50...3.90

4th speed 1/min: 1160 : 0 681 343 009 assembly Opening pressure, bar : 172...175 Sleeve travel mm: 8.10...8.30 5th speed 1/min: 1210 Test inj. tubing : 1 680 750 015 Sleeve travel mm: 9.40...9.60 Outside diameter SLEEVE POSITION x Wall thickness Control-lever position Degree: -1 1/min: 1180 x Length mm : 6.00x1.50x600 Cont.-rod travelmm: 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses Set constant delivery quant. FULL-LOAD DELIV. AT FULL-LOAD STOP per values ____ 1st version 1/min: 700 START OF DELIVERY Speed Charge press. hPa : 900 Test pressure, bar: 25...27 Del.quantity cm3/: 167.0...169.0 1000H.: (164.0...172.0) Dispersion cm3/: 4.00 : 3.50...3.60 Prestroke mm : (3.45...3.65) Contr.-rod trav.mm: 9.00...12.00 1000H.: (7.50) Cam sequence : 1- 5- 3- 6- 2- 4 HIGHEST RATED SPEED 1st version

Control-lever position degrees: 59...67 Testing: 1st c-rod trav.mm : 11.30 Speed 1/min: 1160...1170 2nd c-rod trav.mm: 4.00 1/min : 1220...1250 Speed 4th speed 1/min: 1350 C-rod trav.mm : 0.00...1.00 LOWEST RATED SPEED I Control-lever position degrees: 4...12 Testing: 1/min : 100 Speed C-rod trav.mm min : 5.30 Speed 1/min : 250 : 3.80...4.00 C-rod trav.mm CONSTANT REGULATION 1/min : 270...380 Speed compensator (LDA, ADA, ALDA) 1st version Setting 1/min : 500 hPa : 900 Speed Pressure Contr.-rod & av.mm: 12.30...12.40 Measurement 1/min : 500 Speed 1st pressure hPa : -C-rod trav.mm : 9.80...9.90 2nd pressure hPa : 610 C-rod trav.mm : 12.10...12.20 3rd pressure hPa : 280 C-rod trav.mm : 10.10...10.30 FUEL-DELIVERY CHARACTERISTICS Charge press. hPa : -Speed 1/min : 700 Del.quantity cm3/: 121.0...124.0 1000H.: (118.5...126.5) STARTING FUEL DELIVERY Speed 1/min : 100 Del.quantity cm3/: 160.0...190.0 1000H.: (156.0...196.0) Contr.-rod trav.mm: 20.00...21.00 LOW IDLE

Speed 1/min: 250 Contr.-rod trav.mm: 3.80...4.00 Del.quantity cm3/: 15.0...19.0 1000H:: (12.5...21.5) Dispersion cm3/: 3.00 1000H:: (6.00)

Remarks: Delivery-valve spring pre-tension = 2.40...2.60 mm. Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS SD ang. spacing CS: 0-60-120-180-240-300 Tolerance + - : 0.50 (0.75) Note inst. in remarks column Test sheet : VOL 10.0 Q5 : 13.05.87 SD mark cyl. no. : 1 Edition Superceeded : 6.85 BASIC SETTING Calibrating oil : ISO-4113 1/mi: 700 1st speed : 0 401 846 753 Combination no. Contr.-rod trav.mm: 11.50...11.60 Injection pump Pump designation : PE6P110A320RS3108 Del.quantity cm3/: 14.8...15.0 EP type number : 0 411 816 727 Governor 100H.: (14.5...15.3) Governor design. : RQV325...1100PA232 Governer no. : 0 421 813 309 Dispersion cm3/:0.4Customer-spec. information 100H.: (0.8) : VOLVO-BM Customer 2nd speed 1/min: 325.0 Contr.-rod trav. m: 3.9...4.1 Del.quantity cm3/: 1.6...2.0 100H.: (1.3...2.2) : TD100G Engine TEST BENCH REQUIREMENTS cm3/: 0.3 100H.: (0.6) Dispersion Calibrating-pil inlet temp. OC : 38...42 (B) Setting of injection pump with externally-mounted governor Overflow valve : 1 417 413 025 SLEEVE TRAVELS Inlet press., bar: 1.50 1st speed 1/min: 325 Sleeve travel mm: 1.60...1.70 2nd speed 1/min: 500 Calibrating nozzle-holder : 0 681 343 009 Sleeve travel mm: 2.80...3.20 assembly 3rd speed 1/min: 800
Sleeve travel mm: 5.00...5.20
4th speed 1/min: 1100
Sleeve travel mm: 7.60...7.80 Opening pressure, bar : 172...175 5th speed 1/min: 1200 Sleeve travel mm: 8.70...9.00 Test inj. tubing : 1 680 750 015 Outside diameter SLEEVE POSITION x Wall thickness Control-lever position : 6.00x1.50x600 Degree: -1 1/min: 1175 x Length mm (A) Injection pump setting values Cont.-rod travelmm: 15.20...17.80 Insp. values in parentheses Set constant delivery quant. FULL-LOAD DELIV. AT FULL-LOAD STOP per values ____ 1st version Speed 1/min: 700 Charge press. hPa: 700 START OF DELIVERY Test pressure, bar: 25...27 Del.quantity cm3/: 148.0...150.0 1000H.: (145.0...153.0) Dispersion cm3/: 4.00 : 3.00...3.10 Prestroke mm : (2.95...3.15) 1000H.: (8.00) Contr.-rod trav.mm: 9.00...12.00 Cam sequence : 1-5- 3- 6- 2- 4 HIGHEST RATED SPEED 1st version N26

```
Control-lever
 position degrees: 40...48
Testing:
1st c-rod trav.mm : 10.50
  Speed 1/min: 1140...1150
2nd c-rod trav.mm : 4.00
             1/min : 1220...1250
  Speed
4th speed 1/min : 1350
  C-rod trav.mm : 0.00...1.00
LOWEST RATED SPEED I
Control-lever
 position degrees: 7...15
Testing:
             1/min : 100
Speed
C-rod trav.mm min: 5.40
            1/min : 325
Speed
C-rod trav.mm
                  : 3.90...4.10
                    : 2.00
C-rod trav.mm
             1/min: 340...400
Speed
 compensator (LDA, ADA, ALDA)
1st version
Setting
             1/min : 500
hPa : 700
Speed
Pressure
Contra-rod trav.mm: 11.50...11.60
Measurement
             1/min : 500
Speed
1st pressure hPa : -
                    : 9.70...9.80
 C-rod trav.mm
2nd pressure hPa : 500
o-rod trev.mm : 11.30...11.40
3rd pressure hPa : 300
C-rod trev
                    : 10.00...10.20
  C-rod trav.mm
FUEL-DELIVERY CHARACTERISTICS
Charge press. hPa : -
Speed 1/min: 700
Del.quantity_cm3/: 115.0...117.0
             1000H.: (112.0...120.0)
STARTING FUEL DELIVERY
Speed 1/min: 100
Del.quantity cm3/: 170.0...200.0
1000H.: (156.0...204.0)
Contr.-rod trav.mm: 20.00...21.00
LOW IDLE
             1/min : 325
Speed
```

N27

Remarks: